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Great Lakes Paper Co. Is Sold By Court Order

Justice J. E. McEvoy at Toronto Announces Approval of Sale to John E. Gefaell and Lynn E. Aldrich and Provides for the Transfer of the Property to a New Company to be Known as the Upper Lakes Paper Co.—Decision Was Made on an Application of the National Trust Co. as Trustee for $10,000,000 of Bonds of the Company

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., December 21, 1935—Justice J. A. McEvoy announced today his approval of a sale of the assets and undertakings of the Great Lakes Paper Company, Ltd., which operates a newsprint mill at Fort William, Ont., to John E. Gefaell and Lynn E. Aldrich. He said that next week he would give written reasons for his judgment.

The decision was made on an application of the National Trust Company, Ltd., as trustee for $10,000,000 of bonds of the company. The offer that was accepted provides for the transfer of the property by Messrs. Gefaell and Aldrich to a new company to be known as the Upper Lakes Paper Company. This concern will issue to bondholders $6,000,000 at 5 per cent first mortgage twenty-year sinking fund bonds and 100,000 Class A preference shares, no par, and bearing a fixed cumulative dividend of $2 a share. It also will issue to the bondholders and liquidator of Great Lakes 100,000 common shares and to a trustee for publishers who enter into ten-year contracts for supplies of newsprint 100,000 Class B preference shares.

To Build Straw Board Mill at Coshocton

The Muskingum Fiber Products Corporation was incorporated under the laws of the State of Ohio, December 17 to build a mill for the manufacture of straw board at Coshocton, Ohio. The new plant of the company will be located on a 70-acre tract just west of the city of Coshocton, lying between the Wheeling & Lake Erie Railroad and the Pennsylvania Railroad. The property also has a 1000-foot frontage on the Muskingum River.

The product of the plant will be fifty tons per days of .009 straw board for corrugating purposes. The plant will also manufacture some specialties for the corrugating trade.

The building will be constructed of concrete, brick and steel. The roofs will be underwriters' specified sheeting with built-up Barrett specification roof. The plans for the building are being prepared by Fred A. Jacobs, architect of Coshocton.

Practically all the equipment of the plant is now under contract and construction will be started just as soon as weather will permit in the spring.

The incorporators of the new company are N. H. Carpenter, Mildred H. Carpenter and W. M. Pomerene, all of Coshocton. The officers of the company are N. H. Carpenter, president; Mildred H. Carpenter, vice-president. The secretary and treasurer will be appointed later.

N. H. Carpenter, the president of the new company has personally been in the paper and straw board business since he was 14 years old and has had many years of experience in the product which the new plant will manufacture.

Acquires Assets of Maizewood Products Corp.

W. M. Kretschmer, 702 Roshek Building, Dubuque, Iowa, as trustee of the Maizewood Products Corporation, has just closed the sale of the assets of this concern to the Maizewood Insulation Company. This corporation was formed to take over the property and will continue the manufacture of insulating board from cornstalks at the plant at Dubuque. Herbert A. Hauptli is president of the Maizewood Insulation Company and will have charge of operations at Dubuque. It is understood that the company will have a sales agency in Chicago at 203 North Wabash avenue.

Eastern Tissue Corp. Formed

The Eastern Tissue Corporation has been formed by Harry Blickstein, Max J. Baum and Frank Picola, all of whom were formerly connected with the Gotham Tissue Corporation. The new corporation has purchased the plant of Deutsch Bros. Tissue Corporation, located at 278 Locust avenue, Bronx, N. Y., where it will make a full line of 650, 1M and 2M sheet toilet tissue, with a capacity of 500 cases per day.

Mr. Blickstein will take care of the sales and purchases of the company, Mr. Baum the finances and Mr. Picola will handle the manufacturing end of the business.

American Writing Reorganization Postponed

Submission of a plan to reorganize the American Writing Paper Company, Inc., under Section 77 B, of the Federal Bankruptcy act, which was expected to be made in United States district court in Boston, Monday of last week, has been postponed until January 6.

Wausau Paper Mills Co. Contemplates Changes

May Manufacture Higher Grades of Paper—Wm. B. Clements, Formerly of Bryant Paper Co., Assumes Post of General Manager—E. H. Larkin Appointed Sales Manager, With Offices In Chicago—Walter Cunningham Made Superintendent

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., December 23, 1935—The possibility of a change to higher grades of paper at the Wausau Paper Mills Company, Brokaw, Wis., is seen by William B. Clements, who has just assumed the position of general manager. There will be no immediate changes, however, from the present line of fiber and manila, sulphite bonds and ledgers and specialties. He feels the mill is admirably located for the transition, and has it under consideration.

Mr. Clements comes to the Wausau mill from Kalamazoo, Mich., where he was general superintendent and production manager of the Bryant Paper Company. He has spent thirty-six years in the paper industry, mostly at Holyoke and Fitchburg, Mass. He is a member of the A. P. & P. Mill Superintendents Association, and of T.A.P.P.I., and formerly was chairman of the Connecticut Valley Division of the Superintendents association. Mr. and Mrs. Clements and their eight children are now residing at Wausau, Wis.

Several other changes in personnel are announced. E. H. Larkin, former vice-president and general sales manager of the Bryant Paper Company, has been appointed general sales manager of the Wausau company. He has taken charge of the company's offices in the Conway Building, Chicago, and will handle the entire sales policies of the company. Walter Cunningham, formerly of the Bryant Paper Company, is new general superintendent of the Brokaw mill. George Hendrick, also of the Bryant company, has been appointed purchasing agent. Another Bryant employee, Victor Wersel, has been placed in charge of all incoming orders. He formerly was with the Whittaker Paper Company.

News of the Industry

Employment in paper and pulp mills in Wisconsin was up 1.1 per cent in October as compared with September, the labor report of the Wisconsin Industrial Commission shows. Paper box manufacturing was up 3.6 per cent.

Business of the Kieckhefer Container Corporation, Milwaukee, Wis., for the last six months has run 20 per cent of a year ago, according to John Kieckhefer, president. The first half of 1935 was only 6 per cent above the first six months of 1934. Mr. Kieckhefer expects the present rate will run through at least the first six months of 1936.

Fire losses which formerly were a serious threat to the pulpwood supply of Wisconsin have been reduced to the lowest minimum ever on record during the last year. There was a loss of only 60 acres of timber in a protected area of 2,200,085 acres during the hazardous season recently concluded. Only one of the fires covered more than ten acres, and the average fire was less than an acre. Seventy fires were recorded in a total of 60 acres. The 1934 record was 172 fires which burned over 1,290 acres of protected lands, with 26 of them more than ten acres in size.

This low status has been accomplished through forest rangers and crews of numerous CCC camps. The number of lookout towers has been increased, and many miles of new telephone systems have been built linking the various ranger stations and towers. Roadsides also have been cleared of quickly inflammable dead underbrush.

G. D. Muggleton, formerly with the Combined Locks Paper Company, Appleton, Wis., has been engaged as production superintendent of the Wisconsin Rapids, Wis., Division of the Consolidated Water Power and Paper Company. He will fill a newly created position, according to C. E. Jackson, mill manager, in which he will have supervision of all departments directly engaged in producing and finishing paper.

Members of the Rotary Club at Marinette, Wis., were recent guests of the Victory Bag and Paper Company Division of the Continental Paper and Bag Corporation. A repast was served them at the mill, and after listening to an address by Commodore Thomas, superintendent, on the equipment and processes used, they were taken on a tour of inspection of the various departments.

A dividend of six per cent has been declared by the Credit Union of Neenah Paper Company, Neenah, Wis. The union has 193 employees as stockholders, and has $5,000 in assets. George Seitz is president.

Bird & Son To Pay Bonus

Benjamin H. Roberts, president of Bird & Son, East Walpole, Mass., has sent the following notice to all members of that organization:—"In line with our policy of paying a bonus when our earnings warrant, we are glad to announce a semi-annual Service Bonus distribution on December 30, 1935.

"Those who on December 31, 1935, have been in continuous service of Bird & Son, Inc., for over five years will receive 4 per cent of their normal six months' earnings. Those whose service has been over two years, but less than five years, will receive 2 per cent. This Service Bonus is based on normal six months' earnings, figured as 26 weeks (of 40 hours) at the present rate of each individual.

"We also announce a Profit Sharing Bonus in addition to the Service Bonus:

"Regardless of length of service, every individual in our employ on December 31, 1935, will receive a special 3 per cent bonus. To those with one year or more of service, the bonus will be based on the normal yearly salary or wage rate. To those with less than one year of service, the bonus will be based on the normal earnings for the time employed.

"Both bonuses will be payable on December 30, 1935.

"It has long been the policy of this business to pay as high wages as possible, consistent with competitive conditions, and to pay a bonus when earnings would permit. We must point out that wages and bonuses are both dependent upon profitable production. Profitable production cannot be created by artificial means; it can be created only by hard, intelligent work with due attention to thrift and economy.

"We appreciate the loyalty and mutual understanding which exists throughout our organization. It has made our success thus far possible—our future success rests with the efforts of all of us."

Chicago Market Comparatively Favorable

Prevailing Demand for Various Grades of Paper Fairly Satisfactory—Fine Paper Position Fundamentally Strong—Outlook for Kraft Paper Decidedly Encouraging—Newsprint Paper In Persistent Request—Paper Board Steady to Firm

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., December 23, 1935—The paper business in Chicago, closes the year 1935, in a comparatively favorable position. Markets generally are strong, demand is fairly good and the outlook for general business continues to impress local observers of paper market trends. Outstanding strength developed some time ago in the kraft paper market continues to be very much in evidence and some fine things are predicted for this market after the turn of the year. Groundwoods found the last half of the year decidedly better than the first. Some help came from the newsprint market where, at the present time, there is a marked scurrying around of activity due to the advanced prices expected after January 1. Some expected strength in the book paper market is reported to have failed to materialize due to a bit of premature effort. However, the market is fundamentally strong and looks as though it had further strengthening to enjoy in the near future. Bonds and ledgers terminated the year with a fair show of general strength although inventory proceedings served to slow up the demand. The board market continued active with a firm undertone. Waste papers continued to find a plentiful supply in most grades which counteracted any sustained effort at marked advancement, according to local reports.

Association Activities

Chicago members of the American Pulp and Paper Association who attended the open meeting held at the Drake late last month, took home with them the essence of the 1936 APPA program devoted to personal legislative effort. The association, as indicated by remarks made by both President Sensenbrenner and Counsel Whitney, intends to see that its members are personally acquainted with legislators from the "home districts" both with respect to the Federal Congress and the State Legislatures. The idea is to develop these personal acquaintances so that any individual constructive criticism on legislation as it affects business will be received with confidence by the legislators. The Chicago members took this program into their own State associations and these latter groups found it singularly to their liking. As a result, at least three major Illinois associations are busily engaged in a state-wide campaign of their own to develop a personal contact with State legislators.

The American Pulp and Paper Association is therefore receiving a lot of valuable credit in this territory—another indication of the indirect value of not overlooking Chicago in staging open meetings of this type.

The Groundwood Division held an important general meeting at the Blackstone Hotel, Chicago, on Thursday and Friday, December 19 and 20. President C. H. Sage of the Kimberly-Clark Company, presided over the series of sessions which took up a number of reports on varied activities of the association. Reports were given on the work of the grading committee and the committees devoted to a study of merchants contacts and statistics. A report on the NRA conference now generally known as the Berry Conference was also another feature, as was a careful analysis of the effects of the Canadian Reciprocal Treaty. Groundwood executives also spent some time discussing the outcome of the December 12 meetings of the Book Paper Division and the following meetings of the same division scheduled for Chicago earlier in the week.

No meeting of the Midwest Division of the Salesmen's Association of the Paper Industry is scheduled for Monday, December 23. The next regular session will not be held until January 6, although the annual Christmas party at the Brevoort Hotel on December 27, will serve to hold the ranks together until the new year rolls around.

News of the Industry

A scurrying to various points of the country for the holidays and winter vacations has already begun. George K. Gibson, Mosinee, is in Florida and is expected back in Chicago shortly after the first of the year. Harold Knott, Eastern Manufacturing Company, is in the East for a combined holiday trip and visit to the Eastern mills. A visitor to Chicago during the past week was James H. Coy, Jr., Cherry River Paper Company's eastern territory representative, who spent two days with his father and mother, Mr. and Mrs. J. H. Coy.

Reuben Swan, manager of the Chicago office of the Champion Coated Paper Company, reports that no one has as yet been selected to fill the vacancy in the Chicago sales staff caused by the untimely death last Fall of Earl Runcie

The Swigart Paper Company has recently issued a December close-out list on a wide variety of "all perfect" papers. The announcement, incidentally, is printed on a quite apropo vermilion Ramona Vellum. The monthly close out is a Swigart feature of insuring a clean stock at all times.

The special session of the Illinois legislature has adjourned until January 7, without enacting any legislation of importance with the exception of an old age pension bill. Unemployment compensation insurance legislation, of extreme importance to State employers within the paper industry, was not passed upon and there is little likelihood that it will be discussed much when the Legislature reconvenes for what is expected to be a short two weeks' period.

Employers are anxious to defeat any State unemployment insurance legislation believing that the Federal bill cannot be held constitutional and that no State bill should be on the books in this event.

Paper manufacturers shipping by waterway routes will be interested to know that William N. Brown has been appointed assistant director of the bureau of traffic of the Interstate Commerce Commission, specializing in all matters connected with water carrier rates including competition between rail and water carriers.

The paper industry interested in Minnesota as an outlet —and there are a number of Chicago firms thus interested —notes that intrastate freight rates in Minnesota have been found to result in "undue and unreasonable advantages for shipments within the State" by R. N. Trasise, examiner for the I. C. C. He recommended that the commission over-rule refusal of Minnesota's state authorities to place into effect the emergency freight rates of 1935.

Activities of Paper Industry In Ontario

Third and Fourth Units of Abitibi Canyon Development to Begin Operations Almost Immediately—Earnings of Lincoln Pulp & Paper Co. Increase—Plans Discussed for Settlement of Corrugated Box Co.'s Preferred Dividend Arrears

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., December 23, 1935—Shareholders of Corrugated Paper Box Company will meet in Toronto on January 14 to discuss plans for settlement of preferred dividend arrears as proposed by a committee of preferred shareholders. The plan, it is learned, calls for issue of 7,857 dividend funding rights, to be accepted by shareholders in full satisfaction of dividend arrears now totalling $261,245, or $33.25 per share.

The company may redeem rights direct or by purchase in the open market at a price not exceeding $33.25 provided that such purchase shall not reduce working capital below $260,000, and that provision has been made for preferred sinking fund. If net earnings of the company are not less than $45,000 the company is obligated to set aside 50 per cent. of the balance net profit, of $10,000, which ever is greater, to be used as a sinking fund for redemption of rights.

No official indication is given as to earnings of the company in the current year, but it is understood that earnings are in excess of the $113,875 reported in 1934 and that investments in bonds exceed $100,000. It is also understood that there is a tacit agreement that no common dividends shall be paid in the immediate future unless all other obligations have been met.

The rights will be fully registered but will not bear interest. As long as any rights remain outstanding preference shareholders will be entitled to elect two directors of the company. In the event of liquidation of the company, the rights rank after preferred dividends, and holders may receive up to $33.25 before any payment is made to common shareholders.

Company's Earnings Improved

Hinde & Dauch Paper Company, Toronto, will report earnings in excess of $1 per share for the current year, as compared with 80 cents in 1934 and 26 cents per share in 1933, it is learned. With dividends maintained at 50 cents per share the company will have a working capital in excess of $1,000,000 and a strong cash position, but there is no present indication that the 5½ per cent. first mortgage bonds now outstanding to the amount of $1,179,000 will either be redeemed or refunded. The company has benefited directly as a result of greater stabilization of the paper board industry during the past year. The industry as a whole has had an increase of 7 per cent. in sales of paper board over the 1934 volume, while prices have averaged higher than in 1934 and have off-set increased costs of raw materials and labor. The result has been a decrease in cut-throat competition, and in increased standardization of products which has been beneficial to all units of the industry. Another factor has been the increase in export of board which has been beneficial to mills located at seaboard.

News of the Industry

The Valleyfield Coated Paper Company are putting out a new line of cover paper under the title "Jubilee" which is made in gold and silver plain and fancy finish. The line will be distributed by the United Paper Mills exclusively in Ontario and in Quebec by T. B. Little Company, Ltd., of Montreal.

At the regular monthly meeting of directors of the Ontario Pulp and Paper Makers' Safety Association in Toronto this week it was decided to move the general offices of the organization from the Federal Building on Richmond Street, Toronto, to the Canada Life Building on University Avenue where excellent quarters have been secured. The move will be made early in the New Year. The Workmen's Compensation Board offices are now in the same building. Financial activities and budget requirements were considered and the year's work surveyed.

Lincoln Pulp and Paper Company, a subsidiary of Alliance Paper Mills, and in turn controlled by Howard Smith Paper Mills, has called for redemption at 103 all of its outstanding 7½ per cent. first mortgage sinking fund bonds. The company also has outstanding a six per cent. five-year debenture issue amounting to $395,752 at the end of 1931, of which $176,931 is held by Georgetown Coated Paper Mills and $218,820 by Ritchie & Ramsay, both companies subsidiaries of Alliance Paper Mills. The issue matures on September 1, 1938.

The third and fourth units of the Abitibi Canyon development, each with a capacity of 66,000 h.p., will be placed in operation almost immediately, the Ontario Hydro-Electric Power Commission announced this week. The first three units have been operating since 1933 when the Ontario Power Service Corporation went into the hands of a receiver. Surplus power is sold to Abitibi paper plants in Northern Ontario.

Charles Addoms Resigns as Treasurer

A. H. Chamberlain, executive secretary of the National Paper Trade Association, has sent out the following notice:

"The dates of our annual convention have been set on February 17-20 with headquarters and meetings at the Waldorf-Astoria as heretofore.

"There is every reason to believe that the attendance of both merchants and manufacturers will be the largest ever. Inside information has reached us that with the progressive improvement in business, the Waldorf is getting heavy bookings for months ahead and especially for all convention periods. It is, therefore, highly advisable that you should make your personal reservations immediately, either at the Waldorf or at some other convenient hotel.

"Our beloved friend, Charlie Addoms, who has faithfully and generously served you as national treasurer for nearly ten years, has regretfully tendered his resignation. He feels that he must be relieved of duties and responsibilities outside of his own business.

"Mr. Addoms' decision has been reported to the executive committee of your board of directors and by unanimous vote, they have passed a resolution naming as treasurer, to complete the unexpired term, Charles W. Vernon, Vernon Bros. & Co., New York City. Mr. Vernon accepted the position at the urgent solicitation of friends in the local trade to serve until our next election, which will be held at the convention above announced."

We wish you a very Merry Christmas and a Happy and Prosperous New Year.

And yet, wishes alone bring small results. A really Merry Christmas and Happy New Year depend on you yourself.

It is only by properly equipping your plant for both production and emergency that successful operation can be assured.

Let us do more than wish you success. Let us help you by furnishing stock preparation equipment which is up to the minute in every way.

— Dilts —

MACHINE WORKS Inc. FULTON, N.Y.

"Your Paper Is Made in Your Beaters"

Demand for Paper Well Sustained In Boston

Consumption of Various Grades of Fine and Coarse Paper Continues Heavy—Box Board Seasonally Quiet—Some Improvement Transpired In Paper Stock Market—Lower Grades of Waste Paper Stronger—Rags Move In Better Volume

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., December 23, 1935—The wholesale paper business has kept up remarkably well, considering the period of the year. Some fine paper dealers have been obliged to telegraph for material to meet requirements. At least one wrapping paper house has received emergency calls from local department stores, caused by the biggest amount of trade in years. Prices on kraft will remain the same through January. The box board market continued seasonally quiet, but indications favor a good business in 1936.

December has been fairly active so far in the paper stock market, but it is said to have been difficult to transact business for prompt shipment. The general average of sales in rags has been better. Prices of paper stock are expected to be higher the coming year. Old papers were strong, with prices unchanged. Mixed papers and old newspapers moved fairly well. Bagging was firm, material selling in substantial volume. Three grades appreciated in value, jute rope rising to 2.00 @ 2.25 from 1.75 @ 2.00, scrap sisal to 1.85 @ 1.95 from 1.75 @ 1.85, and scrap sisal for shredding to 2.00 @ 2.10 from 1.85 @ 2.00. New domestic rags continued firm, but with less activity. Quotations were unaltered. In old domestic rags roofing rags steady, with prices sustained throughout the list. In foreign rags, dark cottons were in such demand in Europe that prices would not permit importation.

Business in twines continued good, at least one manufacturer's representative receiving emergency orders.

News of the Industry

The Marvellum Company, of Holyoke, Mass., of which Henry L. Goodman is a representative, has issued Book No. 70 of 1936 designs of Silray Papers, very attractive box coverings, in silver and the following designs: Star, Stipple, Hammered, Flash, Crystal, Textile, Doral, Kris-Kross, Glo, Nugget, Tripo, Vein and Smooth

Percy D. Wells has issued a list of papers, "marked down for Christmas." He has become a representative of the new Self Seal Envelope. Mr. Wells extends this greeting to his customers: "I 'opes that You and Yours has a Joyous Christmas and that all your needs are fully supplied for years and years." (except for paper.)

A window display of Carter, Rice & Co., Corp., shows "Super Cotton—The only radical advancement in cotton twine in 25 years—Greater yardage—Higher tensile strength—Finer appearance." In the display is a replica of an original bale of cotton from which Super Cotton is made. There is also shown twine made of Super Cotton in the natural shade and in colors and Super Cotton yarns —singles.

The office staff of Knight, Allen & Clark, Inc., is to have a Christmas party Tuesday morning, December 24, with a Christmas tree.

The McQuillan Associates of Storrs & Bement Company are to have a Christmas party Tuesday afternoon, with exchange of gifts. The office is to close at 2 p. m.

Storrs & Bement Company have announced the opening of a new stationery department, with a list of 28 items, to which more have been added. Edward D. Wilcox is manager of the department. The announcement is printed on Olde Laid Antique.

E. S. Nuspliger, mill manager of the J. P. Lewis Company, Inc., Beaver Falls, N. Y., called on the trade last week.

Winthrop L. Carter, president and general manager of the Nashua Gummed and Coated Paper Company, Nashua, N. H., said in a year-end statement as president of the New England Council, that New England's business volume during 1935 has been 10 to 15 per cent greater than in 1934.

Price Brothers Reorganization

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., December 23, 1935—It is stated, in connection with Price Brothers and Company, now being operated in liquidation, that underwriting has been completed and the new capital set-up arranged upon a basis which will enable the sponsors to make a practically immediate payment of all coupons in default to date, as well as all obligations on behalf of unsecured creditors, amounting in all to a sum in cash in excess of six million dollars.

Interest arrears on the 6 per cent first mortgage bonds, due 1943, will by February 1 next, approximate 24 per cent, which is to say, about $24 per hundred dollar bond, approximating an aggregate cash payment of some two and a half million dollars. Unsecured and secured creditors, according to the last statement issued by the Hon. Gordon Scott, the curator, amount to $4,145,000 and $2,168,119, respectively.

The statement is further made that, should the present plan be resisted by the stock holders, a Bill will be presented before the next session of the Quebec Legislature, with the specific purpose of safeguarding the $11,000,000 of outstanding bondholdings, and also of perpetuating the fine corporate entity without the disrupting influence of a sale of assets by public auction. This, it is acknowledged, will be an unprecedented legislative action, but it has precedent in recent legislation permitting the change in the terms of a Trust Deed, which is the most inviolate of all forms of contracts, except, perhaps, when the public interest is at stake.

In effect, the proposed Legislation is intended to serve the purpose of foreclosure without the accompanying chaos, delay and ignominy of public auction, which characterized the recent winding-up of a newsprint company in Toronto, ending in court proceedings at this writing.

Allis-Chalmers Centrifugal Pumps

The Allis-Chalmers Manufacturing Company, Milwaukee, Wis., has released four new illustrated leaflets on Centrifugal Pumps as follows:

Leaflet 2206—Large low head double suction single stage Type S pumps.
Leaflet 2207—Large high head double suction single stage Type S pumps.
Leaflet 2208—Small double suction single stage pumps.
Leaflet 2210—Type M Multi-stage double suction pumps.

"Just Around the Corner"

AMERICA'S INDUSTRIES FIND CRANE STOCKS

• Crane service in valves, fittings, and piping is a *localized* service. Within 24 hours of every factory in the United States, and within one to two hours of a great majority of them, complete stocks of Crane valves and fittings are available.

The Crane line is extensive, capable of answering the daily requirements of the 209,348 industrial establishments within the service areas where Crane stocks are carried.

Crane materials will help you solve any piping problem. If extensive modernization is contemplated, the Crane Finance Plan allows you to spread the cost over a period of years.

CRANE SHOP FABRICATION SERVICE
Design — Flanging
Casting — Cutting
Bending — Threading
Welding — Assembling
There is a Crane Valve or Fitting for every piping requirement

ACCURATE

Crane Welded Header

1 Factory fabricated to exact dimensions specified—therefore easily installed.

2 Pressure tested for tightness at all points before approved by Crane inspectors.

3 Welds made by Hartford qualified welders.

4 Uniform strength throughout—all inherently weak sections being reinforced according to modern engineering practices.

5 Material inspected and analyzed before fabrication.

CRANE

CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVE., CHICAGO, ILLINOIS • NEW YORK: 23 W. 44TH ST.
Branches and Sales Offices in One Hundred and Sixty Cities

CRANE VALVES, FITTINGS AND PIPE FABRICATION

Holiday Paper Demand Active In Philadelphia

Various Standard Grades of Both Fine and Coarse Papers Move In Good Volume for Season—Paper Specialties Share General Business Betterment—Leading Executive Predicts Year of Steady and Substantial Business Improvement

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., December 23, 1935—Holiday activity in the paper industry—fine, coarse and specialties—is assuming substantial proportions, thus justifying the early forecast by those in the trade here. An executive in one of the leading paper houses here states that the astonishing part of the momentous year of 1935 is the resilience which business has shown under the battering of all the confusion created by the series of experiments, and it is on this resilience his prophesy for 1936 is made—that it will be a year of steady and substantial business improvement.

Annual Christmas Party

The Philadephia Paper and Cordage Association held its annual election of officers preceding its annual Christmas Party in the Crystal Room of the Adelphia Hotel, on Thursday, December 19. Harry S. Platt, present president, announced that the following members were elected to serve for the coming year: President, George K. Hooper, president of Hooper Paper and Twine Company, who, previous to this year, had served as president for two preceding years; Vice-president, E. K. Lay, of E. K. Lay & Co.; Treasurer, T. C. Hanna, Manufacturers' Representative, and Secretary, John Shinners, owner of Acme Specialty Company.

Retiring President Platt thanked the members for their hearty cooperation during his incumbency, and then called on Mr. Hooper. Mr. Hooper asked that the members take a personal interest in the activities of the Association for 1936 by attending the monthly meetings, and each and every one resolve that the coming year be the most successful year of the organization.

E. K. Lay, the newly-elected vice-president, confined his remarks to the children and the entertainment that was going to be afforded them, made possible by the association.

Seated at the speakers' table were: William A. Meeks, executive secretary of the Typothetae of Philadelphia; the Rev. Crosswell McBee, Chaplain of the Association; J. R. Howarth, of J. R. Howarth Paper Company; Vincent A. Dirvin, of Paper Manufacturers; James Andrews, of Schuylkill Paper Company, Frederick I. Brower, Treasurer, Atlantic Gummed Paper Corporation; Harry S. Platt, retiring president, and George K. Hooper, incoming president.

Dr. McBee, Rector of Old St. Davids, Radnor, Pa., pronounced the benediction.

The activities of the day, which have never been surpassed in the association's annals for appropriateness, completeness of program and generosity and cheer, were in direct charge of E. K. Lay, assisted by Ralph Matthias, of Matthias Paper Corporation, Raymond F. Armstrong, of the F. W. Hoffman Company, Amos Coath, of Frank W. Winne Company, Harry S. Platt and George K. Hooper.

Wm. J. McGarity Estate

An accounting of the estate of the late William J. McGarity, of Penn Paper and Stock Company, filed for audit in Orphans' Court, lists the proceeds of life insurance policies totaling $125,000 as part of the estate. His interest in the Penn Paper & Stock Co., 504 N. American street, is appraised at $233,083, and the entire estate is valued at $382,524. Commissions of $19,125 are claimed by the executors, Girard Trust Company, William J. McGarity, Jr. and Cornelius McGarity. The court is asked to allow $15,000 counsel fee to Harry J. Alker and E. Waring Wilson. Mr. McGarity died March 7; his home was 4644 Spruce street.

Mrs. Charles A. Labor

Many members of the Philadelphia Paper Trade attended the funeral services on December 14, for Mrs. Charles A. Labor, wife of the Philadelphia manager of the Champion Paper and Fibre Company, who passed away on December 11, after an illness extending over several years. Mrs. Labor was widely-known in the industry. She was the former May Kelley, daughter of M. J. Kelley, who, until his retirement in 1928, was general manager of the P. M. Gladfelter Company at Spring Grove, Pa. Mrs. Labor was married to Mr. Labor in 1917. Accompanying her father, and later her husband to many gatherings of the paper trade over a long period of years, her cheerful, vivacious personality endeared her to an increasingly large circle of friends.

Besides her husband, she is survived by her father and one sister, Miss Lilian S. Kelley, of Philadelphia. Another sister, the wife of Norbert A. Considine, president of the Paper House of Pennsylvania and of the Paper Trade Association of Philadelphia, died about five years ago.

Among those from out of town who were in attendance were Herbert Suter, vice-president of Champion Paper and Fibre Company, Hamilton, Ohio, and Mr. and Mrs. George Johnson. Mr. Johnson is manager of Champion Paper and Fibre Company for New York and New England.

Charles F. Hubbs Dead

Charles F. Hubbs, of Brookville, L. I., head of several large paper companies, died of uremia on December 21 in the North Country Community Hospital, where he had been a patient for three weeks. He was 68 years old.

Two daughters, Mrs. George A. Anderson and Mrs. Richard C. Kettles of Brookville, survive. Mrs. Hubbs, the former Mary Richards Howe, well-known horsewoman, died last December 27 at their Brookville home.

Mr. Hubbs was president, treasurer and chairman of the board of Charles F. Hubbs & Company, 289 Lafayette street, New York, and was also president of the Hubbs & Corning Company of Baltimore, the Hubbs & Hastings Paper Company of Rochester, the Hubbs & Howe Company of Cleveland and the Interstate Cordage and Paper Company of Pittsburgh.

Champion Paper & Fibre Co. Income

Consolidated net income of Champion Paper and Fibre Company for the period from April 29, 1935 to October 13, 1935, was $529,748 after depreciation, depletion, amortization, interest, federal taxes and minority interest in income of Champion Fibre Company.

Paper Grading Progress*

By John Strange[1]

The grading of papers undoubtedly was given more concentrated attention under the recent Code Administration than at any other time in the history of the industry. Several of the Associations formed committees, and after many meetings and intensive testing programs, specifications were evolved for some of the larger tonnage grades.

Recently, however, there has been an abatement of this activity, and some have wondered whether the feverish action engendered by the codes was merely a flash-in-the-pan; whether it was a temporary move to meet a transitory condition. The answer is very definitely, NO! Grading committees still exist, and papers are still being graded. This is merely a breathing spell in which the validity of the established grades is being tested and in which thought is being given to the development of an even more comprehensive program. The work that is being done today is sounder more logical, than that done a year ago. This, of course, is to be expected. Before discussing current activities, however, it might be wise to review briefly the grading accomplished under the codes and to analyze for a moment the fundamental social, economic, and scientific factors involved in any grading project.

There were four outstanding reasons why grading was imperative under the N.R.A. The first was the open-price filing provision of the code; the second was the rampant phenomenon of "quality upping"; the third was the need for an adequate classification; and the fourth was the necessity for definition of trade customs differentials.

The industry was in an extremely parlous state in 1933 and early 1934. It was operating at merely 50 per cent of capacity, the lowest in recent history; employment was 25 per cent below normal; and losses were sustained in all of the tonnage grades. When this toppling structure was shouldered with the additional responsibilities of maximum hours and minimum wages it was necessary that something be done to bolster the marketing structure in order to avert financial disaster. Production control and price-fixing were out of the question, consequently the paper industry chose open-price filing as a means of regulating its market situation.

Open Price Filing

As you know, the open-price filing provided for two types of posted prices. First, there were the so-called "A filings" wherein the price of a product had to be justified on a cost basis. Second, there were the "B filings" designed to meet the competition created by papers filed under "A" conditions. These did not have to be justified on a cost basis, but merely had to be comparable in type and quality with the papers against which the filings were made. Under such a set-up, of course, it is possible for the price on each article to descend to the cost of manufacture of the most efficient producer in that field.

It is manifest that the successful working of such a system demands an accurately defined product. Published prices are completely confusing unless one knows the quality of product referred to by these prices. To say that an automobile cost one thousand dollars means nothing until one knows whether it is a Ford or a Rolls Royce. The mere filing of samples without grade specifications does not cure the situation; there must be an official and significant way of evaluating the products in order that the filed prices may assume significance.

Because of the excess capacity and the deflated condition of the market, there was an intense competition for available business. This led to cut-throat practice, and to a drastic slashing of prices. The folly of such a procedure has long been recognized. It has been demonstrated that prolonged selling below cost works against the welfare of the individual, the industry, and the social system in general.

There is more than one way of indulging in this form of competition. The obvious one, of course, is by the simple dropping of prices. But the same result can be achieved in another manner. Suppose that the price on a given article remains static while the quality and workmanship involved are constantly improved. One arrives through the back door in precisely the same position achieved by the price cutting.

The *Monthly Review of the American Paper and Pulp Association* made the following comment on this phenomenon:

"The difference between upping of quality and natural progress can be illustrated by two different techniques of climbing a ladder. Suppose a climber rushes headlong up a ladder and as he goes, kicks out each rung behind him. The higher he goes the more tenuous becomes his position. Imagine his predicament when he reaches the last rung! The climber who proceeds sanely, leaving each rung in place gets just as far, and to him the rungs represent the stages in his upward progress.

"The analogy can be carried still further by applying the old question 'Do the rungs of a ladder hold the sides together, or do the sides hold the rungs in place?' Let the sides represent prices and the rungs the various grades. The sides will have no stability or purpose until the rungs are there.

"Just as the man who kicks out the rungs is either due to land in a heap or to be left high and dry,—so the upping of quality procedure is due to result in a break and jumble of prices or a permanent obligation to furnish a ridiculously high quality product in relation to use."

The American Paper and Pulp Association is a federation comprised of twenty-four smaller associations. Under the code administration those were known as divisions, each division dealing with its own particular problems. Some of these divisions or associations had been in existence for many years. Indeed, one of them was founded shortly after the turn of the nineteenth century, the oldest trade association in this country. Other divisions, however, were created just before or at the time of the codes. It was necessary to classify the many grades of paper among these groups. This had to be accomplished carefully and judiciously because the trade customs varied from division to division. The complexity of the problem can be illustrated by the fact that designing paper was under the jurisdiction of one division; drafting paper under another; while drawing paper was divided among three different associations. It was perfectly possible, of course, to put the same sheet of paper under any

* Presented at the meeting of the Pacific Section of the Technical Association of the Pulp and Paper Industry, New Washington Hotel, Seattle, Wash., Oct. 26, 1935.

[1] Asst. Exec. Secretary, Institute of Paper Chemistry, Appleton, Wis.

one of these three headings. It was merely a matter of preference. It was absolutely necessary, therefore, to define the various papers so that the boundaries of the divisions might be adequately described.

There were many questions of definition in the Trade Customs that required the services of grading committees. For example, what is a semi-bleached pulp; when is a paper transparent and when isn't it; what are the dividing lines that distinguish between slack-sized, standard-sized, and hard-sized papers; when does a tint become a color, and what is a light color, a medium color, and a heavy color? All of these questions sound somewhat like asking how high is up. They were, however, points that had to be passed on before an intelligible system could be provided.

Price filing, quality upping, classification, and trade customs, therefore, were the principal causes of the concentrated grading activity of the past two years. There are several other reasons for grading that are equally important, probably more so in the long run, but the real impetus was provided by the foregoing.

Examination of the grades established under the codes reveals that in almost every instance only maximum specifications were provided. This is easily understood when one recognizes that the system was created chiefly for administrative purposes and to relieve the pressure of a buyer's market. Under this constant pressure for improvement of quality, maximums tended to become minimums. The object was to protect the seller from his competitors; the consumer was automatically protected through the general anxiety to obtain his business.

Grade Changes Expected

Obviously a structure designed to fit a peculiar situation cannot be a permanent one; and there will undoubtedly have to be changes before the established grades can be considered as completely satisfactory. It must be remembered that the committees tried to accomplish ten years' work in the interim of only a few months, and if it had not been for their efforts, it is highly questionable whether the market would have had the stability it did.

Despite the many arguments pointing to the indispensability of a grading program, not all of the divisions established committees and certain other divisions were content to grade only a few of their papers. This lack of concerted, cooperative action was extremely detrimental to the success of the program. Examination of this chart prepared in the offices of the American Paper and Pulp Association reveals how inextricably the divisions were bound together.

It is apparent that the classes and types of paper are spread among the various divisions, and only in a few cases can it be said that all of the grades falling under a general classification were filed within one division.

This chart does not tell the whole story. The problem was really much more difficult. For instance, listed under the column "Wrapping" are the various waxing tissues, and listed under the column "Writing," are the manifold papers. At what point does a waxing tissue cease to be such and become a manifold paper? Likewise, when is a railroad writing classifiable as an industrial writing paper, and when does it become a wrapping paper? At what point does a groundwood manila become a tag board? What is the dividing line between mill blanks and tag board? When does a book paper become a bristol board and when can a mimeograph paper be used for writing purposes? How good does a wrapping tissue have to be to disrupt the waxing market? Such questions could be multiplied many times, but these illustrate how vitally necessary it was to have correlated action. The failure of the divisions to operate concertedly was a very serious obstacle to the more complete success of the grading program.

There were certain other conditions hindering the activities of grading committees. Perhaps the most important of these was the emphasis placed on the existing price levels. For instance, if six price levels existed for a certain type of paper, an attempt would be made to set up six different grades. Assuming that grading and the price structure were compatible, this would have been a logical procedure. If grading and the price structure did not agree, it is obvious that one or the other would suffer.

Grading, A Scientific Procedure

Prices are not entirely the result of rational action. They are a summation of particular incidents and are influenced by many different factors. Grading, by itself, is largely scientific; it is an evaluation of papers in terms of properties considered essential for particular use requirements. Strictly speaking, therefore, it is independent from price. The latter is a result of complex economic and particular forces; the former is a result of scientific observation. It is not until he recognizes this dilemma that one fully appreciates the grading work.

It should not be inferred from the above that this is an attempt to criticize the various committees. There is no thought of doing so, and when all factors are considered, perhaps they chose the best course. This is, however, an

	Absorbent		Board			Cover			Printing		Tissue		Wrapping		Writing			
Association	Commercial	Sanitary	Binders or Fibre	Card	Other Boards	Building	Box & Liners	Other Covers	Book	Groundwood	Sanitary	Industrial	Sanitary	Other Wpg's	Commercial	Duplicating	Industrial	Pulp
Am. Sulphate Pulp & Board	..	..	..	..	×	..	..	..	..	..	..	..	..	..	..	..	..	..
Binders Board	..	..	×	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Blotting Paper	×	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bogus Wrap. & Packing	..	..	..	..	..	×	..	..	..	..	..	..	..	×	..	..	×	..
Book Paper	..	..	..	×	..	..	×	×	×	×	..	×	..	×	×	..	×	..
Bristol Board	..	..	..	×	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cardboard	..	..	..	×	×	..	..	..	..	..	..	..	..	..	..	..	..	..
Cellulose Wadding	..	×	..	..	..	×	..	..	..	..	×	×	×	..	..	..	..	..
Cover Paper	..	..	..	..	..	..	..	×	×	..	..	..	..	..	..	..	..	..
Leatherboard	..	..	..	×	×	×	..	..	..	..	..	..	..	..	..	..	..	..
Fibreboard	..	..	×	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Fibre Shoe Ct.	..	..	×	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Glassine & Greaseproof	..	..	..	..	..	..	×	×	..	×	..	×	×	..	×	×	×	..
Groundwood	..	..	..	..	..	..	..	..	..	..	..	..	..	×	..	..	..	..
Kraft Paper	..	×	..	..	..	..	..	..	..	..	..	..	×	..	..	..	..	..
Natl. Crepe Paper	..	..	..	..	..	..	..	..	..	..	×	×	..	..	..	..	..	..
Paper Napkin	..	..	..	..	..	..	..	..	..	..	..	..	..	×	..	..	..	..
Paper Shipping Sack	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Soda Pulp	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	×
Specialty Pa. & Bd.	..	..	..	×	×	×	..	..	..	..	..	..	..	×	..	..	×	..
Sulphite Paper	..	..	..	..	..	..	×	..	×	×	..	..	..	×	..	..	..	..
Tissue	..	×	..	..	..	..	..	..	×	..	×	×	..	×	..	..	..	..
U. S. Pulp	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	×
Vegetable Parchment	..	..	..	..	..	..	..	..	..	..	..	..	..	×	..	..	..	..
Writing	..	..	..	×	..	..	..	×	×	..	..	×	..	×	×	×	×	..

attempt to analyze frankly the several forces influencing the program.

There were two basic principles of grading followed, and the committees were sometimes embarrassed in attempting to compromise between them. In one instance the furnish would be specified and no attempt was made to regulate the finished product. This was equivalent to saying, "Here are the materials; make what you can." The difficulties encountered under this procedure can be demonstrated by asking whether fifty per cent of unbleached sulphite made out of eastern spruce is equivalent to the same percentage of middle western or far western hemlock. How much de-inked stock is equivalent to how much soda—or how much hardwood sulphite?

Under the other basic principle of grading, only the properties of the finished paper are specified. There is no attempt to say what materials or equipment should be used in making the article. The goal is to achieve a product which will conform to certain use requirements and which will have a certain serviceability. The manufacturer is allowed to exercise his ingenuity in arriving at the specifications and may take advantage of his geographical location or of any improvements in technique which he may have discovered. This is equivalent to saying, "We don't care how you make it or what you use, but this is what we want."

Grading Based on Use Requirements

This principle of grading avoids many of the intricacies encountered in the furnish principle and unquestionably is the sounder method in theory. The trouble, however, is that with the present knowledge of use requirements and with the dearth of adequate means of measuring many of the properties instrumentally, the only way of describing or predicting certain properties is by the materials used. It should be pointed out, however, that the committees generally have recognized that grading on the basis of the finished product is a sounder method, and they have followed this principle whenever it was possible to do so.

Another serious impediment to the program was the lack of fundamental knowledge of use requirements and the lack of instruments to measure the properties that the committee had in mind. For example, no one would question the fact that the chief requirement for book papers is that it be printable, and yet it is very doubtful whether all the factors influencing printability are known, and if known, whether they are measurable. Likewise, in butchers wrap, after a certain minimum strength has been specified, one of the principal requirements is that the paper have the ability to wrap meat without blackening. Yet it is not definitely known what causes meat to blacken. In ledger paper, for instance, erasability is an important property, but it is doubtful whether this property can be measured accurately enough at this time to include it as a specification. Most of the techniques and instruments, which were in existence at the time of the committee's work, were merely for control purposes and were not sufficiently precise nor did they measure the necessary properties.

In recognition of this fact the Paper Industry Authority voted a substantial appropriation to be used in the development of new instruments. A report summarizing the progress and achievements of this instrumentation program will be published by the Association shortly. It might be said in passing that in addition to thorough studies of the properties of gloss, smoothness, stiffness, transparency, sizing, color, and the effect of humidity upon paper testing, there have been developed three new instruments for the measurement of formation, gloss, and transparency. One of the principal objectives of this study is the evaluation of all existing instruments and techniques with a critical analysis of the various properties that they measure.

It is manifest that a grading program cannot be permanently successful unless it is scientifically valid. It follows, therefore, that a fundamental scientific study, such as this one, forms one of the basic steps in a program leading to a logical grading structure. There must be further knowledge of use requirements, paper properties, and of the means of measuring them if any great progress is to be made.

Amazing Accomplishments

The accomplishments of the grading committees are quite amazing when one considers the difficulties they were faced with and the short time in which they had to complete their work. Specifications were evolved for sulphite bond, ledger, mimeograph, manifold, papeteries, uncoated book, coated book, tablets, postal card, lithograph, bleached sulphite wrapping, unbleached sulphite wrapping, tag, file folder, and all of the groundwood papers. A classification system was also worked out by the Pulp Association. This was all done within the short interim of the codes and at a cost of less than a dollar a ton on the sales for a single day of the paper involved. The concentrated meetings and the hundreds of thousands of tests that the committee examined in feverish activity will probably never be fully appreciated.

Since the expiration of the codes this grading work has continued. The associations who erected grades under the N.R.A. have attempted to carry on with this phase just as they have with hours, wages, and trade customs. Certain associations have continued to do constructive work in evolving new grades. The Groundwood Grading Committee has been diligently at work on a color nomenclature and classification system which promises to be the most constructive piece of work accomplished in this field to date. The Tissue Association has appointed a grading committee for towels and this committee is working very constructively and effectively in the face of one of the most difficult situations that has confronted any of the committees. They are approaching the problem in a fundamental manner and are consequently avoiding many of the difficulties discussed earlier in this paper.

You perhaps wonder just what part The Institute of Paper Chemistry has played in this whole program. As you may know, the Institute is an educational and research institution devoted to the welfare of the pulp and paper industry. Early in its existence, it established the policy of doing no routine testing. With the innovation of the codes, however, it was soon realized that it would be necessary to establish an official testing station where the various associations could have their work done on a comparable and scientific basis. This testing station had to have sufficient equipment and man power to meet the concentrated demand of the committees. The Institute was asked, therefore, to cooperate by dedicating an adequate portion of its equipment and man power to grading work. The original policy of the Institute was consequently amended to meet this situation, and for some time the various testing departments of the Institute operated on a twenty-four hour basis. No students were used in this work. A special procedure of receiving, testing, and recording samples had to be developed. In order to insure the scientific validity of the work, an inviolate policy was established of having every single test checked by independent operators. This meant that in every instance twice the number of standard tests was made.

You are familiar with the so-called "brightness tester,"

which is more correctly known as the General Electric Reflection Meter. This was developed by technical men of two paper mills in cooperation with the staff of The Institute of Paper Chemistry and of the General Electric organization. It formed a very vital part in the book grading picture, and its use subsequently spread to most of the other associations confronted with the grading of white papers. It was necessary that this very precise instrument be calibrated, serviced, and constantly checked by a scientific organization. The Institute agreed to perform this service, and even today there are two men of its personnel who spend a major portion of their time keeping track of the various brightness testers in the field and constantly checking on their accuracy.

Later on when the Central Grading Committee and the Paper Industry Authority took the very necessary step of establishing a study of fundamental paper properties and instruments, this work was granted to the Institute, in light of its experience as an official testing station, its work with the brightness tester, and the facilities which it offered in the way of equipment and personnel for developmental work.

It is evident that the grading of papers involves management, sales, marketing, and manufacturing as well as technical problems. In recognition of this fact, it was suggested that in the personnel of each grading committee there be adequate representation of sales, manufacturing, and technical interests. Here again a word might be said about the Institute. Realizing that, in addition to scientific problems, industry policy and economics were concerned in grading problems, the Institute took no part in the interpretation of test results or in the actual establishment of standards. It remained the official testing station and performed the duties requested of it in the scientific evaluation of instruments and paper properties.

Shortly before the expiration of the N.R.A., the Paper Industry Authority requested the Central Grading Committee to draw up a comprehensive grading program viewing the problem from an industry-wide rather than from a divisional angle. Before this work could be started, the N.R.A. collapsed and with it, of course, the request of the Paper Industry Authority. Recently, however, the Executive Committee of the American Paper and Pulp Association, which is the same body under a different name, renewed the earlier request, and the Central Grading Committee is again confronted with the problem of drawing up a comprehensive program.

The problem is a very difficult one because in addition to the specific obstacles discussed above, there are certain other general tendencies that retard the grading work, not only in the paper industry, but in any industry.

First of all, there is the question of usability versus salability. It is a phenomenon common to most industries that articles very similar in quality or usability (and sometimes identical in these features) will sell for different prices under different names. The paper industry is no exception. Perhaps this procedure is economically sound. It may be that difference in advertising costs, size of markets, or manufacturing care demand such a procedure. To give a ridiculous example: The same paper might be used to wrap diamonds and potatoes, the former being called a "diamond wrap" and the latter a "potato wrap," and different prices might be charged for the two articles. Obviously, size of the markets and the uses are vastly different although the same paper qualities may satisfy both examples. The price of paper is much more significant in terms of the cost of potatoes than it is in terms of the cost of diamonds; yet, from a technical standpoint, the description of the paper properties involved is the same, and this will be apparent under a process of standardization.

All industries are undergoing or have undergone a gradual transformation from a pure craft into a scientific process. During this period of transformation the materials and equipment used are changing continually, and the variables of manufacturing are many. The change is so constant that it is difficult to standardize or to grade since the work done today rapidly becomes obsolete in the face of technical progress. Curves are often drawn illustrating this growth in industry. In its early stages the curve slopes upward very rapidly; then there is a gradual tapering off as the industry becomes more mature scientifically. What would such a curve drawn for the paper industry look like? How much is known about manufacturing variables? How closely can products be controlled? Those are questions that the various committees must answer. It was in recognition of this problem that the Central Grading Committee established its fundamental instrumentation and property study.

Another problem which any grading activity must face is the necessity of discriminating between properties which are definitely and inextricably bound up with the use requirements and properties which are merely the result of fad or fashion. This problem often becomes very intricate since it involves many marketing aspects.

It is very easy to think of reasons why it would be difficult to grade, but these reasons should not be used as excuses for discontinuing or discouraging the work, since the arguments why industry should grade, indeed will have to grade, are more convincing.

It would seem that the trend of business will inevitably be toward more concerted action. The cooperative spirit necessary for this move has been augmented to a certain extent by the many meetings engendered by the N.R.A. Industry is faced by the rising costs nurtured through legislation involving pensions, unemployment insurance, etc., and by the tax increases that are necessary to make these systems workable. It would appear very necessary, therefore, to meet this situation by cooperative action and by the establishment of an intelligible marketing structure which will lend itself to greater stability. It is obvious that grading is a very important function in the working out of such a system.

Consumer's Specifications

The consumers of paper are becoming increasingly specification conscious. The Institute and the various associations are frequently confronted with requests from consumers for information on instruments and paper properties. It is obvious that the paper industry will find itself faced with a heterogeneous array of specifications if the individual consumers set up their own standards. It is likely that in many instances such specifications will not be in sympathy with manufacturing tolerances and costs. An industry grading program would seem to be one of the best ways of insuring against such a situation.

One of the very tangible benefits from grading work is the saving in manufacturing, distribution, and inventory costs that will result from simplification and elimination of unnecessary grades. A very real example of this is found in the work of one of the committees. For one relatively limited market, there were over a hundred different grades manufactured. It was apparent that this number was very many more than the market demanded, and after a certain amount of work, these original hundred grades were reduced to a little more than twelve with obvious economies to both producer and consumer.

Paper and pulp play an extremely important part in the foreign trade of this country, and the Import Com-

mittee of the American Paper and Pulp Association is constantly confronted with problems of definition. These customs cases often involve large amounts of money and are extremely important from an industry standpoint. A more adequate system of grades and definitions would be highly valuable in this work.

It would seem that there is no problem more closely related to the aims and ideals of the Technical Association of the Pulp and Papper Industry than grading. Grading is consonant with the growth of scientific methods in the industry. It means a controlled product in which technical skill and ability to produce according to the actual needs of the consumer are paramount. It means elimination of sales ballyhoo and a clearing of the debris of unnecessary and complex grades. It means the introduction of an orderly structure which will lend itself more readily to industrial cooperation and which will allow companies to compete on the basis of skill with products clearly defined rather than through rumors or hearsay made effective because of the intricacies of a chaotic system.

New England TAPPI Discusses Costs

The New England Section of the Technical Association of the Pulp and Paper Industry met at the Hotel Nonotuck, Holyoke, Mass., Friday evening, Dec. 20, 1935. In the absence of the chairman, Harry M. Keating of the Smith Paper Company, Lee, Mass, the vice-chairman, presided.

L. C. Reynold Speaks

L. C. Reynolds, Assistant to the President and Comptroller of the American Writing Paper Company, Inc., Holyoke, Mass., spoke on "The Relationship of Technical Improvements to Costs in the Paper Industry" and illustrated some of the fallacies in determining the savings which would result from technical improvements. The principal point he made was to the effect that an improvement might lower the unit costs as generally figured but might increase the total out-go of the company; and that the figuring of savings for the justification of expenditures for improvements should be based upon a comparison of total income and out-go before and after the improvement rather than based upon a comparison of unit costs.

Mr. Reynolds also discussed the matter of obsolescence, depreciation and interest on investments in order to show that often the treatment of these matters is not such as to liquidate them through costs but rather through the surplus account. He showed the tendency of technical improvements was to increase capacities and cause companies to go after business on a stop-loss basis.

Mr. Reynolds also illustrated the essential difference between industries where the sales income made a turn-over of the fixed assets once a year as against those where this happens several times a year; showing how important the treatment of technical improvements, in determining costs, is to the former class of industries.

Sanford Thompson on Incentives

If we discard the theory now so prevalent that we can "pull ourselves up by our boot-straps," it is evident that to raise our standards of living we must reduce costs and improve the quality of the things we buy, Sanford E. Thompson, president of the Thompson & Lichtner Company, Inc., of Boston, Mass., the second speaker, told of the opportunities for further progress in these directions in paper and pulp mills through the payment to the operators of money incentives based on quality production. Savings are being made in some mills as high as $300 per day through such developments, complaints and returns from customers are reduced, and the quality of the paper is made more uniform.

One of the interesting things about such developments is the fact that the largest gains are made through better use of raw materials and control of process rather than by reducing the numebr of employees.

In his talk Mr. Thompson drew his illustrations largely from the wide experience of his company in the introduction of scientific methods of management and also presented the results of a brief survey he had made based on questions sent to prominent paper and pulp mills. Replies came from all over the country, from Maine to California.

The returns were somewhat astounding in showing the comparatively small percentage of companies utilizing incentives to improve the quality or to increase the quantity of the paper produced. Only 13 per cent of the pulp mills reporting give incentives or financial rewards of any kind to their operators to improve production. In the making departments of the paper mills where the paper is made only about 20 per cent of the companies give incentives and scarcely more than half of these include the vital quality element. In the finishing departments 35 per cent of the companies reporting pay incentives but only about one-third of these take into account the quality factor in making up these rewards.

Most noteworthy of all, however, is the fact that the companies which do give incentives based on thorough standardization of their operations are most enthusiastic and report results with appreciable savings and improvement in quality of paper produced.

Some of the conclusions reached were as follows:

1. Incentives in a paper or pulp mill in which quality is not a first requirement are worse than useless.
2. Incentives properly applied based primarily on quality or maintenance of technical standards result in better paper and reduced cost and improved labor relations.
3. Improvement in uniformity of quality thus attained results in larger production and less waste.

Arthur Howland To Speak

For our January 17th meeting we expect to have with us Mr. Arthur Howland of Tileston & Hollingsworth Company, Boston, Mass., who will talk on merchandising.

Those Who Attended

Among those present were the following:

Frank Ladd, Keith Paper Company, Turners Falls, Mass. George Sprague, American Writing Paper Company, Holyoke, Mass. Walter J. Cassidy, American Writing Paper Company, Holyoke, Mass. Arthur Coffin, Titanium Pigment Company, New York City. W. O. Johnson, Strathmore Paper Company, Woronoco, Mass. W. P. Richardson, Arthur D. Little, Inc., Cambridge, Mass. S. D. Hellberg, American Writing Paper Company, Holyoke, Mass. Andrew Barnett, American Writing Paper Company, Holyoke, Mass. H. M. Keating, Smith Paper Company, Lee, Mass. Roger C. Griffin, Arthur D. Little, Inc., Cambridge, Mass. Sanford E. Thompson, The Thompson & Lichtner Company, Boston, Mass. L. N. Smith, American Tissue Mills, South Hadley, Mass. W. A. Nivling, Huron Milling Company, Boston, Mass.

Frank Bosler, American Writing Paper Company, Holyoke, Mass. Howard Clare, American Writing Paper

Company, Holyoke, Mass. G. A. Thompson, Jr., B. F. Perkins & Son, Inc., Holyoke, Mass. L. C. Reynolds, American Writing Paper Company, Holyoke, Mass. John P. Kennedy, American Writing Paper Company, Holyoke, Mass. C. W. Damon, Fitchburg Paper Company, Fitchburg, Mass. G. J. Flathers, Louis DeJonge Company, Fitchburg, Mass. Andrew Jackson, American Writing Paper Company, Holyoke, Mass. N. R. Pike, Nulomoline Company, New York City. James Barrett, American Writing Paper Company, Holyoke, Mass. Howard Carroll, American Writing Paper Company, Holyoke, Mass. E. A. Richardson, Smith Paper, Inc., Lee, Mass.

Albert Stettner, Fitchburg Paper Company, Fitchburg, Mass. Claude Smith, American Writing Paper Company, Holyoke, Mass. Helen U. Kiely, American Writing Paper Company, Holyoke, Mass. Lena E. Kelley, American Writing Paper Company, Holyoke, Mass. R. J. Proctor, Fitchburg Paper Company, Fitchburg, Mass. Dwight K. Bartlett, Jr., West Dudley Paper Company, West Dudley, Mass. George Carroll, American Writing Paper Company, Holyoke, Mass. F. H. Willemain, American Writing Paper Company, Holyoke, Mass. W. L. Foote, B. F. Perkins & Sons Company, Holyoke, Mass. P. S. Sinclair, The Sinclair Company, Holyoke, Mass. A. H. Stanton, Maaon Neilan Regulator Company, Boston, Mass. William J. Burke, General Dyestuff Corp., Providence, R. I. Robert Moorhead, American Writing Paper Company, Holyoke, Mass. F. W. Adams, Mass. Institute of Technology, Cambridge, Mass.

R. H. Doughty, Fitchburg Paper Company, Fitchburg, Mass. John F. Inderdohnen, The Bristol Company, Waterbury, Conn. Thomas Flaherty, American Writing Paper Company, Holyoke, Mass. Gustav E. Mangsen, Fitchburg Paper Company, Fitchburg, Mass. Leon M. Yoerge, American Writing Paper Company, Holyoke, Mass. James Ramage, Franklin Paper Company, Holyoke, Mass. T. L. Stirling, Papermakers Chemical Company, Holyoke, Mass. J. M. Booth, Huron Milling Company, New York City. Harold Lavallee, Clinton Company, Holyoke, Mass. F. H. Lovenberg, Mathieson Alkali Works, Providence, R. I. C. F. Kirley, West Dudley Paper Company, West Dudley, Mass. John T. Leecock, American Writing Paper Company, Holyoke, Mass. R. G. Loomis, Case Brothers Manufacturing Company, Manchester, Conn.

Joseph P. Prescott Tendered Banquet

[FROM OUR REGULAR CORRESPONDENT]

NORTH WILBRAHAM, Mass., December 20, 1935.—Joseph P. Prescott, retiring vice-president and treasurer of the Collins Manufacturing Company, was tendered a testimonial and farewell banquet at the Hotel Nonotuck in Holyoke last night by executives, foremen and members of the office force of the company. Mr. Prescott, who is widely known in paper industry circles, was connected with the Collins company for many years. He learned the business from the ground up in the local plant, and rose to the position he held at the time of his retirement by his ability and executive qualities. Prior to his making any announcement of his plans for the future he will spend several months in Europe with his family.

William C. Bryant, sales manager for the Collins company, acted as toastmaster at last night's event, and among those whom he called upon to speak were General Manager Herm n Grasselt, Superintendent James Fitzgerald, Office Manager H. C. Carruthers, George E. Murphy Jr., A. L. Foss, Edward Rex and Ralph Tupper. Mr. Murphy gave an interesting résumé of happenings during Mr. Prescott's period with the company.

The honor guest was presented a scroll and traveling case. His remarks of acceptance will long be remembered by those with whom he was associated for many years. The presentation speeches were made by H. C. Carruthers and A. L. Foss. Dancing was enjoyed following the banquet.

Those who attended were as follows: J. P. Prescott, General Manager Herman Grasselt, Sales Manager William C. Bryant, Superintendent James Fitzgerald, Office Manager H. C. Carruthers, A. L. Foss, George E. Murphy Jr., Ralph Tupper, Paul Tupper, Edward Rex, Grant Willey, Charles Backus, Miss Eleanor Brindley, Mrs. Irene Therrien, Miss Bessie Campsie, Mrs. Dorothy Anderson, Miss Barabara Berry, Miss Elizabeth Martin of Holyoke, Roy Crofton, Roy Fisher, Fred Larro and William Joy.

St. Regis Paper Proposes Cuts in Stock Values

A proposal of recapitalization of St. Regis Paper Company will be presented to stockholders at the annual meeting to be held January 8, whereby the stated par value of the common shares will be reduced from $10 to $5 a share.

Stockholders will also be asked to approve a proposal to reduce the number of directors from eighteen to ten, the number now making up the board.

At present there are 100,000 shares of $100 par value of preferred stock, of which 44,283 shares are outstanding, and 7,500,000 shares of par $10 common stock. There are 4,125,000 shares of common outstanding. The company proposed to reduce the total capitalization of $85,000,000 to $47,500,000, which is to be effected by reducing the par value of the common stock to $5 a share, leaving the preferred undisturbed. This change will reduce the issued capital stock of the corporation by $20,625,000.

Stockholders are being advised by Floyd L. Carlisle, chairman, and R. K. Ferguson, president, that the directors believe the proposed change will be advantageous.

"In the event the stockholders approve the reductions a plan will be carried out which provides for a reduction in the investment in stocks of subsidiaries on the books of the corporation and for other adjustments," Mr. Carlisle and Mr. Ferguson point out to stockholders. "If the recommendations of the management are adopted in full, the carrying out of this plan further provides for reduction to nominal amounts of certain intangible assets (patents and good will) on the books of the corporation and subsidiaries. As of December 31, 1934, the amount of such tangibles was approximately $16,330,000.

"The adjustments to be made on the books of the corporation will apply first against earned surplus (amounting to approximately $3,909,000 at December 31, 1934) and thereafter against the capital surplus, as increased by the proposed reduction in the stated capital of the corporation."

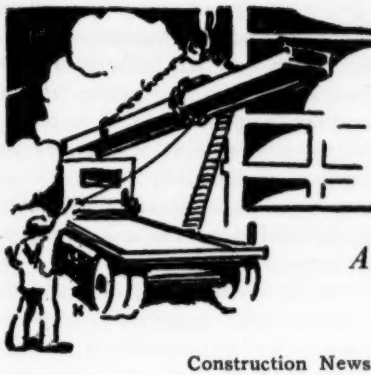
It was stated that pursuant to the reduction of capital stock as proposed, no distribution of assets will be made.

May Acquire Package Paper Co.

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., December 24, 1935—Plans are being forwarded for the purchase or absorption of the Package Paper Company of this city by the Nashua Gummed and Coated Paper Company of Nashua, N. H. The offer in compromise in the case now before the Federal Court on reorganization proceedings was 80 cents on the dollar to the creditors and this has been approved for about 150 claims totaling $200,000 by Judge Elisha Brewster of that Court.

The rest of the creditors are expected to fall in line.



CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Dayton, Ohio—The Howard Paper Company, Urbana, Ohio, manufacturer of bond and other writing papers, ledger stocks, etc., has plans maturing for new plant at Dayton, to be used for paper-converting service, primarily for production of commercial and other envelopes and allied products. It will be of multi-story type, reported to cost over $500,000, including equipment. Work is scheduled to begin early in 1936, and will be pushed to early completion. It is understood that new plant will be operated in conjunction with the Dayton Envelope Company, Dayton. Ward R. Howard is general manager of first noted company.

Portland, Ore.—Fibreboard Products, Inc., Russ Building, San Francisco, Cal., manufacturer of corrugated board, chip board and kindred board products, operating mills at Los Angeles, Antioch, Cal., and other points on Pacific Coast, has concluded negotiations for purchase of plant and assets of F. C. Stettler Manufacturing Company, Portland, manufacturer of folding paper boxes and other containers, paper labels, etc., for a reported consideration of $310,000, and will consolidate with its organization. Portland plant will be continued as a paper-converting factory by purchasing company, and the Stettler company, it is understood, will be dissolved. Improvements will be made in plant. Acquiring company is controlled by the Paraffine Companies, Inc., Emeryville, Cal.

Amcelle, Md.—Celanese Corporation of America, Amcelle, near Cumberland, Md., manufacturer of cellulose rayon products, with headquarters at 180 Madison avenue, New York, has approved final plans for new one-story addition to mill at Amcelle, with award of general contract to George F. Hazelwood, Cumberland. Superstructure will be placed under way early in 1936. A number of miscellaneous contracts have been let for different features of construction, including structural steel contract to Guibert Steel Company, Pittsburgh, Pa.; roofing to Tri-State Roofing Company, Cumberland; and plumbing to William M. Clark & Son, New Castle, Pa. New unit is estimated to cost close to $85,000, including equipment. Company engineering department will be in charge. W. M. C. Cameron is vice-president, in charge of operations.

Brooklyn, N. Y.—The Pack-in Carton Corporation, recently organized with capital of $15,000, is said to be planning operation of local plant for the manufacture of paper boxes and containers, including folding box units. Incorporators of new company include Louis Kramer and Jack Schur. Company is represented by Joseph H. Harris, 16 Court street, Brooklyn, attorney.

Middletown, Ohio—The Gardner-Richardson Company, manufacturer of paperboard products, combination board specialties, etc., with mill at Lockland, Ohio, has asked bids on general contract for extensions and improvements in office and operating building at Middletown, including new two-story and basement addition, 41 x 54 feet. Program is estimated to cost about $45,000, and will be placed under way at early date. J. Douglas Lorenz, 330 West First street, Dayton, Ohio, is architect.

Cleveland, Ohio—The Cleveland Corrugated Box Company, manufacturer of corrugated boxes and containers, and the Great Lakes Box Company, manufacturer of kindred products, both occupying portion of large building at 7275 Wentworth avenue, fronting on Big Four Railroad, under lease, are planning early replacement of plants, recently destroyed by fire, wrecking the entire structure with total loss of more than $350,000. A considerable portion of loss was sustained by two companies noted. The Great Lakes company only recently removed to the building, occupying two entire floors, aggregating close to 75,000 square feet of floor space. Plans are said to be under consideration for early rebuilding of the structure.

Cohoes, N. Y.—Fire recently damaged a portion of local mill of the Peerless Fibre Company, Ontario street, manufacturer of fibre goods. An official estimate of loss has not been announced, but is reported as slight.

Cleveland, Ohio—The Gair-Cleveland Containers, Inc., has been organized under Delaware laws with capital of 1000 shares of stock, no par value, as an interest of the Robert Gair Company, 155 East Forty-fourth street, New York, N. Y., manufacturer of corrugated boxes and containers, to operate a plant at Cleveland.

Richmond, Va.—The duPont Rayon Company, Ampthill, near Richmond, manufacturer of cellulose rayon products, has approved plans for new addition to local mill, to be one-story, estimated to cost close to $45,000, including equipment. Superstructure will be carried out by day labor and will be placed under way at early date. Main offices of company are at 350 Fifth avenue, New York.

Rimouski, Que.—The Ontario Paper Company, Ltd., Thorold, Ont., manufacturer of newsprint, is considering preliminary plans for large new mill on Comeau Bay., St. Lawrence River, near Minicouagan Island, opposite Rimouski, where extensive tract of land has been selected. Plant will consist of several units, to be equipped for large tonnage. It is expected to begin work during 1936, and to carry project to completion about 12 months later. Company owns large timber lands in the immediate vicinity of proposed mill, to be used for raw material supply; rights for water power on the Outarde River in the same district have been secured from the Government of Quebec. Entire project is estimated to cost in excess of $6,000,000. Ontario company is affiliated with the Chicago Daily Tribune, Chicago, Ill., and the New York Daily News, New York, N. Y.

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COMING EVENTS IN THE PAPER INDUSTRY

AMERICAN PAPER AND PULP ASSOCIATION, Fifty-Eighth Annual Convention and Meeting, Waldorf-Astoria Hotel, New York, February 17-21.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, Convention, Waldorf-Astoria Hotel, New York, February 17-20. Annual Luncheon, Waldorf-Astoria Hotel, Thursday, February 20.

SALESMEN'S ASSOCIATION OF THE PAPER INDUSTRY, Annual Meeting and Luncheon, Waldorf-Astoria Hotel, New York, Tuesday, February 18.

NEW YORK ASSOCIATION OF DEALERS IN PAPER MILL SUPPLIES, Annual Banquet, Hotel Commodore, New York, February 19.

NATIONAL PAPER TRADE ASSOCIATION OF THE UNITED STATES, Convention, Waldorf-Astoria Hotel, New York, February 17-21.

CANADIAN PULP AND PAPER ASSOCIATION AND SECTIONS, Annual Meeting, Montreal, January 29-31.

TECHNICAL SECTION, CANADIAN PULP AND PAPER ASSOCIATION, Annual Meeting, Montreal, January 29-31.

THE WAGNER LABOR ACT DECISION

In its initial encounter with the Federal Courts, the Wagner Labor Relations Act was dealt a severe blow. In the first ruling on the law in the Majestic Flour Mill case, the act was held invalid in its entirety under the Commerce Clause by Judge Otis of the Federal District Court at Kansas City, Mo., who said: "Manufacturing is not commerce nor any part of commerce. Nothing more firmly is established in constitutional law than that. Congress, therefore, under the commerce power, cannot regulate manufacturing as commerce. Never can these relations be any part of commerce."

Judge Otis said that "the prime question in the case was stated thus: 'Insofar as the act impliedly prohibits (by empowering the board to prevent) a refusal by employers in such a flour mill as that at Aurora to bargain collectively with their employes and prohibits individual bargaining, is it constitutional?' "

A majority of the employers in the Majestic Mill organized a union, Judge Otis recites. The union, he goes on, made such demands that the owners were compelled to close the mill. Among other things the union demanded that the owners sign a contract that they would employ none except members of the union and discharge no employee without cause.

"It was then that complainants," the judge wrote: "committed the 'offense' on account of which the Government of the United States proceeded against them. The 'offense' was this: They refused to execute the contract demanded by the union (to that extent refusing to bargain collectively with the representatives of a majority of their former employees), and they reopened the mill, re-employing all former employees who applied for employment, 'dealing with said employees individually'."

Judge Otis recited that the Labor Board then initiated a proceeding against the owners of the mill, the action resulting in the suit at issue.

"The very heart of the act is the prohibition and prevention of so-called unfair labor practices," Judge Otis wrote. "All else, including the legal remedy, is incidental to that and must go down with it.

"There is no way, and defendants point to none, in which any of the specific unfair labor practices in any business, whether mill or mine or factory or store, conceivably can directly affect, by burdening or obstructing commerce.

"Here again the suggestion, the only suggestion, is that unfair labor practices will result in discontent, possibly in strikes, hence in limitation of production, hence in lessened commerce. But that is affecting commerce only indirectly, remotely."

The final fate of this bill will presumably rest with the Supreme Court of the United States and its action, naturally, cannot be foretold. Judging, however, from this Court's disposition of some recent outstanding cases, those who have doubted the constitutional validity of this act would seem to have good ground to believe that Judge Otis' decision will be upheld.

FOREIGN PAPER TRADE EXPANDS

After a slight recession during the months of August and September, exports of paper and paper products again took an upward turn and October's shipments exceeded those of the corresponding month in 1934 by nearly 30 percent, according to the Forest Products Division of the Dept. of Commerce. For the ten-month period the total shows a gain of nearly 10 percent compared with last year. Should this trend continue during the next two months the United States export trade in paper and paper products for 1935 will pass the $20,000,000 mark. An encouraging feature is that nearly all items on the schedule show a rise in quantity as well as value. The only notable exceptions were wrapping papers and over-issue news, shipments of which have dropped 15 percent below last year's. Exports of fine papers are well ahead of 1934, writing papers showing a rise of 40 percent. Exports of boxboards and other paper boards are about 20 percent ahead of last year, and a somewhat larger increase appears to have taken place in shipments of wall and insulating boards. The least advance seems to have been made in shipments of newsprint and a number of converted items, such as towels and napkins, filing folders and office forms, boxes and cartons, rolls for cash registers and adding machines, paper bags, and envelopes. With the exception of the last two items, however, exports of these articles were on a level or slightly exceeded 1934 shipments.

Exports of paper base stocks dropped off somewhat during October, but the ten months' total shows a rise in value of nearly 20 percent compared with the corresponding period in 1934. With the exception of rags and other waste for paper stock, shipments of all classes were higher this year.

Imports of newsprint during October continued to show a slight rise over those of the corresponding period last year. Imports for the ten months' period reached a total of 1,899,136 tons valued at $65,691,577, an increase of 6 percent over last year. Prices continue to hold steady at an average of around $34 per short ton.

The value of other classes of paper and paper products rose 50 percent in October compared with the corresponding month last year. While most classes contributed to this increase, particularly heavy gains are noticeable in imports of kraft wrapping, paperboards, and leatherboards. The aggregate value of October imports, exclusive of newsprint, rose to $1,254,371, bringing the total for the ten months up to $11,212,834, as against $8,641,562 during the corresponding period in 1934.

Imports of paper base stocks during the first ten months of 1935 also show a slight rise in value and volume compared with 1934. Receipts of pulpwood increased 8 percent in quantity and 6 percent in value, and receipts of rags and other waste for paper-making 50 percent in quantity and 60 percent in value. Wood pulp imports show a rise of 9 percent in value, although the volume recorded was about the same as recorded last year. Sulphate pulp, both bleached and unbleached, has represented a larger proportion of the imports so far this year. Imports of unbleached sulphate were only 3 percent ahead of last year, but imports of bleached sulphate were greater by 60 percent. At the same time imports of bleached sulphite pulp were about on a level with 1934, while imports of unbleached sulphite and mechanical pulp declined about 5 percent.

Total imports of this class during the ten months period were valued at $65,022,223, as against $58,970,099 during a corresponding period in 1934.

TAPPI Specification E 400 s Changed

A change in wording of Note 2 of TAPPI Specification E 400 s for Chromium-Nickel-Iron Castings has been proposed. This constitutes a minor change intended to clarify the suggested use of molybdenum in accordance with the original intention of the Committee on Materials of Construction of the Technical Association of the Pulp and Paper Industry.

As revised, Note 2 will read as follows: "There is plenty of experimental evidence demonstrating the power of molybdenum to contribute extra resistance to corrosion by sulphurous acid and calcium bisulphite and the committee considers its presence up to 4 per cent a distinct advantage in alloys containing less than 28 per cent chromium and 9 per cent nickel.

Comments on this proposed change should be addressed to J. D. Miller, Chairman, TAPPI Materials of Construction Committee, Continental Paper and Bag Corporation, York Haven, Pa.

Production Ratio Report

(These statistics are based upon paper production reports to the American Paper and Pulp Association).

COMPARATIVE MONTHLY SUMMARIES

1935	Total Production Ratio	1934	Total Production Ratio
January	65.8%	January	.....
February	70.0%	February	.....
March	70.5%	March	.....
April	70.0%	April	.....
May	69.4%	May	.....
June	72.3%	June	.....
July (b)	67.8%	July	.....
August	70.9%	August	.....
September (c)	75.0%	September (c)	59.4%
October	75.6%	October	64.7%
November	75.4%	November	61.7%
December	.....	December (a)	62.1%

COMPARATIVE WEEKLY SUMMARIES

CURRENT WEEKS, 1935		CORRESPONDING WEEKS, 1934	
*December 7	76.2%	December 8	61.2%
*December 14	73.3%	December 15	65.4%

The following statistics show the number of mills reporting by ratio groups:

Ratio Limits	Number of Mills Reporting Current Weeks: December 7, 1935	December 14, 1935
0% to 50%	89	72
51% to 100%	245	178
Total Mills Reporting	334	250

* Subject to revision until all reports are received.
These data exclude (a)—Christmas Day, (b)—Fourth of July, (c)—Labor Day.

Paperboard Operating Ratios

According to reports from the National Paperboard Association, per cents of operation, based on "Inch-Hours," were as follows:

1934	1935	1935	1935
September 62%	January .. 61%	May 61%	September. 69%
October 63%	February . 67%	June 65%	October .. 76%
November 56%	March 67%	July 59%	November. 70%
December 53% (a)	April 61%	August .. 65%	

Week ending December 7, 1935..... 67%
Week ending December 14, 1935..... 66%

Government Paper Bids

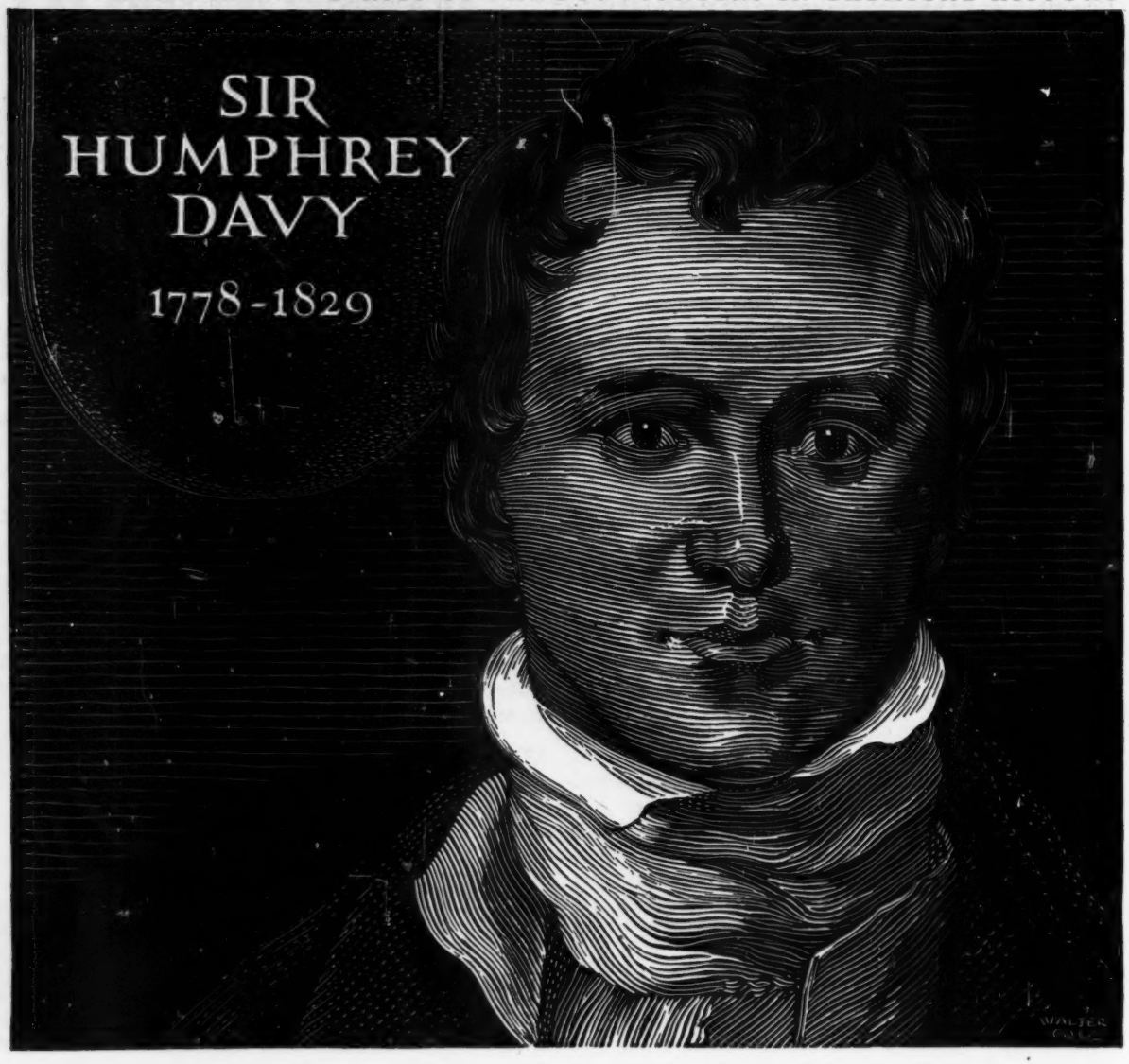
[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., December 24, 1936—The Government Printing Office has received the following bids for 65,000 pounds (2,000,000 sheets) of white sulphite manifold paper: Whitaker Paper Company, 7.47 cents per pound; Old Dominion Paper Company, 8.08 cents; Barton, Duer & Koch Paper Company, 9.15 cents; R. P. Andrews Paper Company, 7.44 cents; J. W. Butler Paper Company, 7.72 cents; Paper Corporation of the United States, 7.74 cents; Mathers-Lamm Paper Company, 7.74 cents; Dobler & Mudge, 7.74 cents; Enterprise Paper Company, 9.15 cents; Stanford Paper Company, 7.47 cents; and Charles G. Stott & Co., 7.74 cents.

The following bids were also received at 9.21 cents per pound for 16,000 pounds of 25 per cent rag white blotting paper: J. R. Howarth Paper Company, R. P. Andrews Paper Company, Dobler & Mudge, George W. Millar & Co., Old Dominion Paper Company, Barton, Duer & Koch Paper Company, Whitaker Paper Company, and L. Hyman & Son.

A bid of 4.95 cents per pound was received from the Baldwin Paper Company for 34,500 pounds of white sulphite writing paper. All of the other bids for this paper were at 5.57 cents per pound from the following: Cauthorne Paper Company, Whitaker Paper Company, Reese & Reese, Inc., John F. Post, George W. Millar & Company, Dobler & Mudge, R. P. Andrews Paper Company, Paper Corporation of the United States, Aetna Paper Company, Barton, Duer & Koch Paper Company, and Old Dominion Paper Company.

NUMBER THREE OF A SERIES OF FAMOUS PIONEERS IN CHEMICAL HISTORY



Apprenticed to a surgeon and apothecary at the age of fifteen, Davy was appointed to the Royal Institution in 1801 at the age of twenty-three and was knighted eleven years later. His health failed, however, while he was still at the height of his career and he died in 1829 at 51. Davy is said to have been one of the first to use the electric current for thorough and fundamental chemical investigation.

IN 1807 fashionable London paid twenty pounds a head to watch Sir Humphrey Davy at the Royal Institution perform the miracle of the age—to see him produce small quantities of metallic sodium by means of a new-fangled electrical apparatus. Davy's epoch-making discovery and his pioneer work with Faraday in experimental electricity marked the beginning of the modern electrolytic process for manufacturing caustic soda. Mathieson, pioneer producer of high purity caustic soda both by the electrolytic and ammonia-soda processes, has also pioneered the distribution of caustic soda in liquid form to large consumers. Mathieson Caustic Soda is now supplied to industry from three strategically-located producing points — Saltville, Va., Niagara Falls, N. Y. and Lake Charles, La.

The MATHIESON ALKALI WORKS (*Inc.*), 60 East 42nd St., New York, N.Y.

SODA ASH . . . CAUSTIC SODA . . . BICARBONATE OF SODA . . . LIQUID CHLORINE . . . BLEACHING POWDER . . . HTH AND HTH-15 . . .

Mathieson Chemicals

AMMONIA, ANHYDROUS AND AQUA . . . PH-PLUS (FUSED ALKALI) . . . SOLID CARBON DIOXIDE . . . CCH (INDUSTRIAL HYPOCHLORITE)

Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

Properties and Sulphate Pulping Characteristics of Compression Wood

By M. Y. Pillow[1] and M. W. Bray[2]

It has long been recognized at the Forest Products Laboratory that greater information on the pulping characteristics of distinctive or abnormal types of wood may be of considerable assistance in explaining unusual results obtained from material not ordinarily recognizable as abnormal. Accordingly the tests here reported were made to obtain information on the characteristics of sulphate pulp produced from compression wood, an abnormal type of wood found in all coniferous species.

Appearance of Compression Wood

Compression wood differs from normal wood in gross anatomy, minute structure of the individual elements, and in chemical composition. It is formed on the lower sides of leaning trees and on the under sides of branches and can be identified in logs by the presence of eccentric annual rings having unusually large percentages of summerwood in the wider portions of the rings. In lumber it usually can be distinguished from normal wood by its relatively wide growth rings and lifeless appearance which results from lack of contrast between springwood and summerwood (Figs. 1 and 2).

[1] Asst. Wood Technologist, Forest Products Laboratory, Forest Service, U. S. Department of Agriculture, Madison, Wis.
[2] Member TAPPI, Chemist, Forest Products Laboratory, Madison, Wis.

FIG. 1
Cross section of a loblolly pine log with conspicuous compression wood.

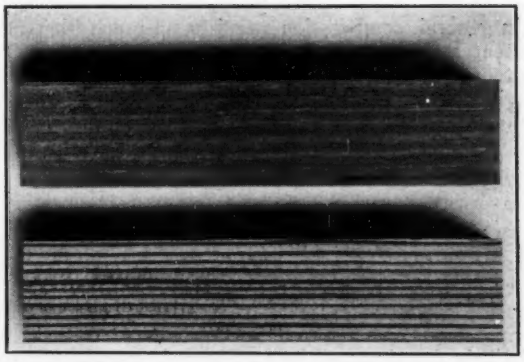


FIG. 2
Small pieces of loblolly pine wood. Upper view shows compression wood; lower view shows normal wood. The relative widths of annual rings and lack of contrast between springwood and summerwood, the latter being the dark layers, are apparent.

Not only does compression wood differ from normal wood of the same tree or other trees within a given species, but it also varies within itself as it is formed in all gradations from that which differs widely from normal wood to that which is recognizable as compression wood only by microscopical examination. In general, compression wood may be divided into two broad classes: (1) Pronounced compression wood, which is conspicuous and easily recognizable on sight, and (2) mild compression wood, which is not easily recognized but can be distinguished from normal wood by microscopical examination.

Anatomical Characteristics of Compression Wood

In addition to the differences in the general appearances of compression wood and normal wood already mentioned, there are differences in the cellular structure. The lack of the relatively sharp line of demarcation between springwood and summerwood of the same annual ring of compression wood is shown in Fig. 3 to be due to a gradual

change in the size and thickness of walls of the fibers as compared with the more abrupt change in normal wood.

It is in the summerwood particularly that the greatest structural variations between compression wood and normal wood are found. Under a microscope the summerwood tracheids of compression wood usually appear to be nearly circular in cross section whereas those of normal wood are more or less rectangular. Because of the circular shape they frequently are interspersed with intercellular spaces which occur most commonly at the junction of four cells (Fig. 4).

In longitudinal sections through compression wood fibers, checks and striations are seen. These are spirally oriented in relation to the longest axis of the cell (Fig. 5). They indicate the slope of fibrils within the secondary cell wall. The spiral checks have been observed in freshly cut compression wood from living trees as well as in compression wood that has been partially dried.

Table I presents the characteristics of mild and pronounced compression wood in comparison with those of normal wood. These data were derived from selected samples of loblolly pine and do not necessarily represent averages for the species. Compression wood fibers are shorter than normal wood fibers.

TABLE I

CHARACTERISTICS OF WOOD STRUCTURE IN SELECTED SPECIMENS OF MILD AND PRONOUNCED COMPRESSION WOOD AND IN NORMAL WOOD FROM THE SAME TREE. LOBLOLLY PINE

Type of wood	Shape of summerwood cells in cross section	Relative number of intercellular spaces	Average slope of fibrils in tracheids: Springwood, degrees	Average slope of fibrils in tracheids: Summerwood, degrees	Average ring width, millimeters	Average amount of summerwood, per cent
Normal wood....	Rectangular	None	22.8	4.8	1.5	46
Mild compression wood	Circular	Few	30.9	23.1	2.8	49
Pronounced compression wood..	Circular	Many	35.1	29.3	4.3	63

Chemical Characteristics of Compression Wood

In general, compression wood has a much higher lignin content and a much lower cellulose and alpha-cellulose content than has normal wood of the same species. Table II gives data on the chemical composition of pronounced compression wood from one loblolly pine tree in comparison with the average composition of normal wood of a number of loblolly pine trees.

TABLE II

CHEMICAL CHARACTERISTICS OF COMPRESSION WOOD AND NORMAL WOOD OF LOBLOLLY PINE, BASED ON PERCENTAGE OF OVEN-DRY WEIGHT

Characteristic	Normal wood Per cent	Compression wood Per cent
Total cellulose	58.7	46.1
Alpha cellulose	45.7	34.6
Pentosans	12.4	12.2
Lignin	28.3	35.2
Solubility in:		
Alcohol-benzene mixture	2.7	2.5
Ether	1.9	1.3
1 per cent NaOH	9.9	12.6
Hot water	1.8	2.0

Material Investigated

A single butt piece of loblolly pine pulpwood containing a large amount of pronounced compression wood in the outer portion was used in the pulping study. The compression wood, after being separated from the adjacent normal wood, was pulped by the sulphate process under relatively drastic conditions. Since the compression wood came from the outer portion of the log, slab wood of average loblolly pine was selected as normal wood for comparative purposes. The normal wood was cooked with slightly smaller amounts of chemicals than used for the compression wood but otherwise the same conditions of temperature and pressure were employed.

Characteristics of Pulp Made from Compression Wood

Comparison of sulphate pulp made from compression wood with pulp made from normal wood showed the following disadvantages for the compression wood: (1) a lower yield of crude pulp, (2) a decrease in strength properties, (3) a decrease in chemical purity, and (4) a rather marked increase in bleach requirement. In other words, to produce pulp of equal purity and bleach requirement, compression wood requires more severe cooking conditions than does normal wood.

The yield of pulp from compression wood was 42.4 per cent, whereas that from normal wood (slab wood) was 48.5 per cent. Although the pulp from compression wood showed a fair bursting strength, its tearing strength and folding endurance was considerably lower than that of

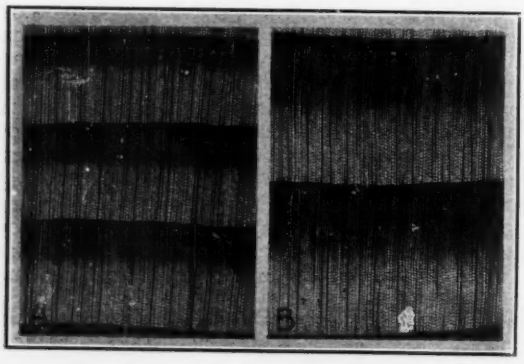


FIG. 3

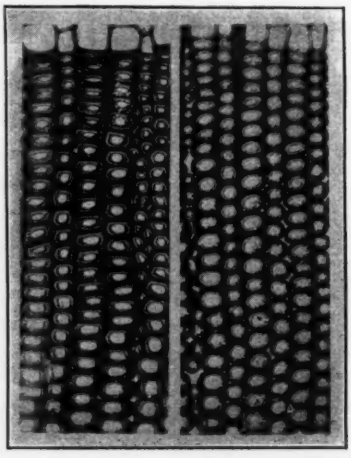


FIG. 4

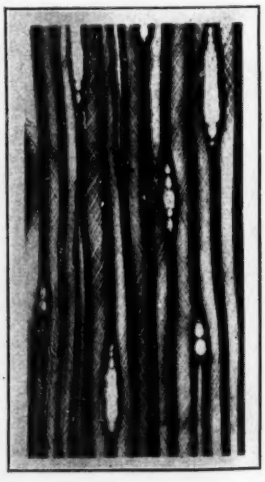


FIG. 5

Fig. 3.—Transverse sections of wood: A, normal wood showing relatively sharp demarcation between springwood and summerwood of the same annual ring in comparison with B, compression wood in which sharp demarcation is lacking. The darker horizontal bands are summerwood. Fig. 4.—Highly magnified transverse sections of wood showing typical summerwood cells of A, normal wood, and B, compression wood. Note checks in secondary well, intercellular spaces and circular cross-sectional shape of summerwood cells of compression wood. Fig. 5.—Highly magnified longitudinal section showing typical summerwood cells of compression wood with spirally oriented cracks and striations in the secondary wall.

pulp from normal wood. The compression wood pulp processed much more rapidly (shown by rate of decrease in freeness) in the pebble mill than did similar pulp made from slab wood, the former developing its maximum bursting strength in 80 minutes, whereas the latter required 120 minutes. Similar results were obtained in a 1-pound beater as shown by the following experiment: Twenty-gram samples of pulp from each of the two cooks were beaten separately for the same lengths of time and under the same conditions. Freeness (Schopper-Riegler) after beating of the compression wood pulp was considerably lower than that of the slab wood pulp (175 as against 890).

In chemical composition, the pulp from compression wood was lower than that from slab wood in both total and alpha-cellulose by about 8 and 7 per cent, respectively. On the other hand, the lignin content was considerably higher in the compression wood pulp; 12.6 per cent compared with 6.4 per cent. The dark color of the unbleached compression wood pulp and its higher lignin content may account for the marked increase in bleach requirement. Cuprammonium viscosity values were approximately one-half those of pulps made from normal wood.

Screen analysis showed that after equal amounts of beating compression wood pulp contained greater proportions of fine fiber fragments than the slab wood pulp (Table III).

TABLE III

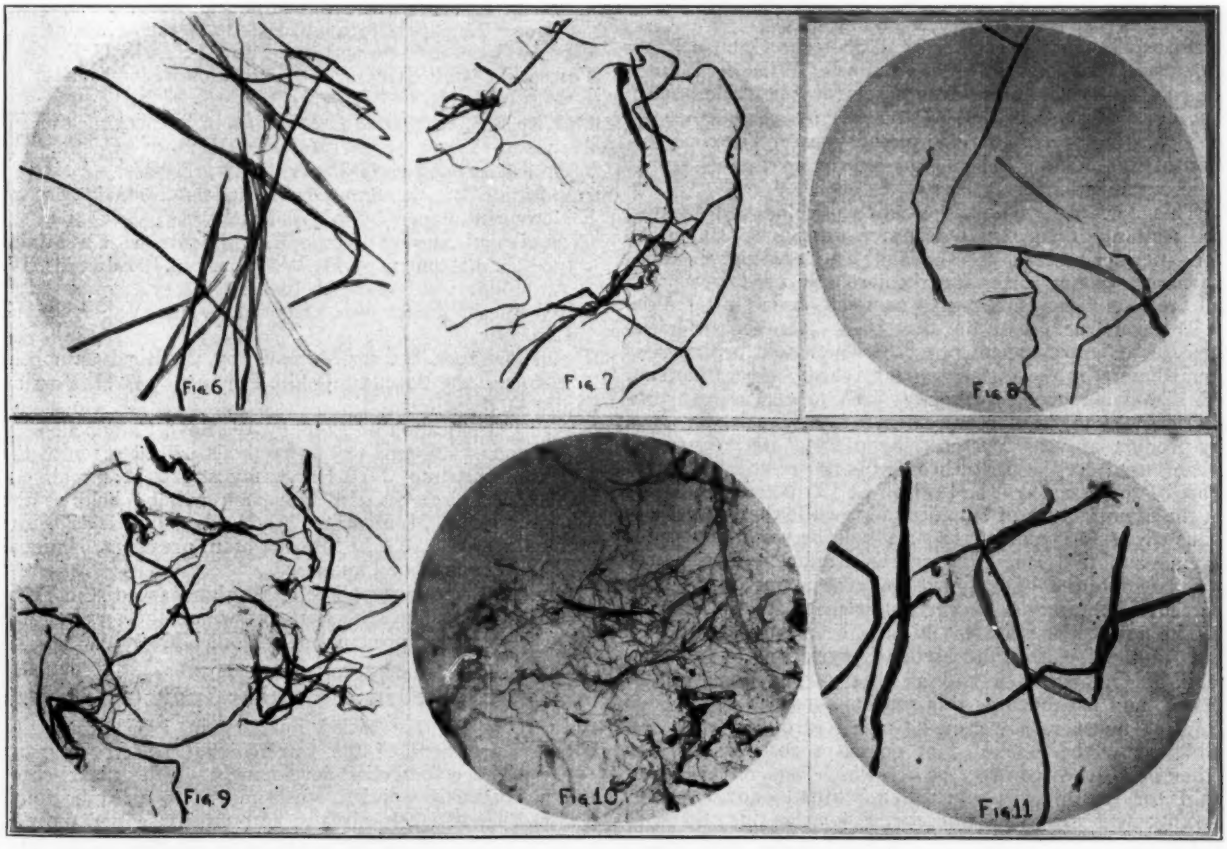
SCREEN ANALYSIS OF KRAFT PULP AFTER BEATING MADE FROM SLAB WOOD AND COMPRESSION WOOD, BASED ON PERCENTAGE OF DRY WEIGHT. LOBLOLLY PINE

Fractions	Normal wood Per cent	Compression wood Per cent
Retained on 24-mesh screen	74.8	31.0
Retained on 42-mesh screen	5.7	7.5
Retained on 80-mesh screen	8.5	12.5
Retained on 150-mesh screen	5.0	7.5
Passed through 150-mesh screen	6.0	41.5

Microscopic examination of the fractions obtained from the screen analysis tests showed that beating tended to cause greater fibrillation of the compression wood fibers than of the slab wood fibers. Fibers of pronounced compression wood have the appearance of being "unraveled" in much the same manner as a length of heavy twine or yarn might be unraveled if twisted simultaneously in opposite directions between the fingers. Fibers from normal wood appear to be broken across more or less abruptly, the ones with thinner walls (springwood) being crushed or twisted by the beating process.

Figs. 6 to 9 illustrate the effect of beating in a 1-pound beater on normal wood and compression wood fibers. Fig. 10 shows the extreme fragmentation and fibrillation of the compressed wood fibers as a result of beating. Fig. 11 shows crushing and twisting in springwood fibers and fragmentation of summerwood fibers in normal wood fibers.

The microscopical observations definitely indicate that



FIGS. 6, 7, 8, 9, 10 AND 11

Fig. 6.—Photomicrograph of screen analysis fraction of normal wood retained on 24-mesh screen. Fig. 7.—Photomicrograph of screen analysis fraction of compression wood retained on 24-mesh screen. Fig. 8.—Photomicrograph of screen analysis fraction of normal wood retained on 42-mesh screen. Fig. 9.—Photomicrograph of screen analysis fraction of compression wood retained on 42-mesh screen. Fig. 10.—Photomicrograph of screen analysis fraction of compression wood retained on 150-mesh screen. Fig. 11.—Photomicrograph of screen analysis fraction of normal wood retained on 80-mesh screen.

compression wood pulp is more rapidly disintegrated by mechanical processing and that fibrillation of the cell wall is correlated with the structure of the individual elements. Development of maximum bursting strength in a shorter period of time, production of a greater proportion of fine fiber fragments, and the lower freeness after beating confirm the foregoing indication.

Fibrillation of compression wood fibers occurs along planes parallel to those at which the fibrils of the secondary wall are orientated.

Conclusions

The physical characteristics of loblolly pine compression wood that most markedly affect the properties of pulp are the shorter fibers and the greater slope of fibrils in comparison with normal wood. Chemically compression wood has a lower cellulose and alpha-cellulose content and a higher lignin content than normal wood; consequently the yield of pulp is lower and the consumption of chemical higher than for normal wood. Strength properties and freeness of processed sulphate pulp made from compression wood are lower than similar properties of pulp made from normal wood. The color of sulphate pulp derived from compression wood is darker and it bleaches with greater difficulty than that from normal wood. Because of their structure individual compression wood fibers disintegrate more readily on mechanical treatment than do normal wood fibers.

Ontario Paper Co. To Build New Boiler Plant

[FROM OUR REGULAR CORRESPONDENT]

THOROLD, Ont., December 22, 1935—The Ontario Paper Company, Ltd., has awarded to Foster-Wheeler Limited of St. Catharines, Ont., a contract for two boilers, each having a capacity of 150,000 pounds of steam per hour at a working pressure of 450 pounds gauge. The construction of the building is being carried out by the company's own organization.

This new plant will have sufficient capacity to supply the winter peak demands of process steam for their 500 tons newsprint mill at Thorold. The contract includes furnaces, economizers, superheaters, air pre-heaters and all the minor accessories of a complete boiler installation.

The construction of the new boiler plant is the initial item of an improvement program which will be followed immediately by the installation of a turbo-generator plant of 13,000 horsepower capacity. This power will be produced from the mill requirement of process steam, as a by-product at very low cost, by passing all the process steam used in the mill through back-pressure turbines. Part of the steam will be bled off at 125 pounds and used in the manufacture of sulphite pulp, while the balance exhausted at 30 pounds pressure will be used for paper drying and mill heating purposes. Sufficient firm power will be produced in this way to carry about thirty-seven percent of the motive power requirements of the mill.

The new boiler plant would have been installed in 1932 but for the fact that the Hydro-Electric Power Commission of Ontario then had a large surplus of available power, and inasmuch as this surplus consisted on the one hand of unusable power in its own hydro-electric plants, which could be generated at no extra cost, and on the other of Quebec contract power which was reserved and paid for but likewise unused, a mutually advantageous arrangement was made whereby, so long as this otherwise unsaleable surplus might be available in sufficient quantity. The Ontario Paper Co. Ltd., would postpone the construction of its modern steam plant and use this power for the generation of steam, through the agency of electric boilers. The Commission also sold surplus power to other paper companies.

Owing to the steadily increasing load in the Niagara system and the recent cancellation of the Quebec power contracts, the Ontario Paper Company Ltd. is unwilling to prejudice its newsprint production, and is therefore proceeding immediately with this construction program. All contracts are being given on the basis of having the plant in operation by April 30, 1936.

The decision to build the new boiler plant was made early this month and its completion in April will constitute a record in speed of construction under winter conditions. But, while speed of construction has been emphasized, a great deal of preliminary study had previously been done by the efficient Engineering staff of the Company, covering many types of boilers at various steam pressures.

The members of the organization most closely associated with Capt. A. A. Schmon in this work were L. C. Anderson, manager of manufacturing; R. W. Shaver, director of research and development, J. T. Jaeger, chief engineer, M. H. Jones, plant engineer, W. L. Eliason, electrical superintendent and E. J. Calnan, steam control engineer. In addition, Stone & Webster engineering Corporation and H. G. Acres & Co. were consulted in the final preparation of plans and specifications.

Canadian Technical Meeting

The annual meeting of the Technical Section of the Canadian Pulp and Paper Association will be held on January 29 to 31, 1936 at the Engineering Institute of Canada Building, 2050 Mansfield St., Montreal, P. Q.

Among the papers to be discussed are the following:

Electric Generation of Steam in Paper Mills, by C. R. Reid.

Formation and Structure of Cellulose Membranes, by Wanda K. Farr.

Opacity Measurements as a Means of Measuring the Influence of Some of the Variable Factors Affecting the Optical Properties of Paper, by Otto Maass.

Application of Vacuum Drying to the Manufacture of Newsprint Paper, by W. G. Mitchell.

Groundwood Studies—Some Experiments with a Miniature Pulp Grinder, by H. W. Johnston, J. Edwards, W. W. Holland and G. D. O. Jones.

Extension of Paper by Adsorbed Water Vapor, by G. Larocque.

Trend in Paper Testing Methods, by W. Boyd Campbell.

The Role of the Base in Sulphite Pulping, by F. H. Yorston and C. R. Mitchell.

Screen Classification of Pulp, by W. Boyd Campbell.

A demonstration of testing methods will be given at the Research Institute, 3420 University street, Montreal.

The Technical Section Luncheon will be held at the Windsor Hotel, Montreal on Wednesday, January 29. The speaker will be A. G. L. McNaughton, president, National Research Council of Canada.

On Thursday there will be a joint luncheon of the Technical and Woodlands Sections, at which the speaker will be A. E. Morgan, principal of McGill University.

Nickel in the Paper Industry

In reviewing the nickel industry in 1935, Robert C. Stanley, president of the International Nickel Company says: "The commercial development of the nickel-chromium, austenitic stainless steels moved to a firmer foundation. These steels already account for a demand for nickel by the steel industry. While public interest has been centered largely on the stainless steel streamlined trains, the expanding use of the alloy for equipment in various branches of the chemical, oil and pulp and paper industries has already become relatively more important to nickel."

Waste Liquors and Gases of the Paper Industry

A Survey of Recent Domestic and Foreign Patent Literature on the Utilization of Waste Liquor and Waste Gases of the Pulp Industry, 1931-1935

(Third Compilation.)

Clarence J. West, Chairman, Committee on Abstracts and Bibliography, TAPPI

(Continued from the issue of December 19, 1935)

British Patents (continued)

1095. 393,962. JUNE 12, 1933. ERIK L. RINMAN. PURIFYING WASTE CAUSTIC SODA LIQUORS. (Addition to 381,697.

In obtaining waste liquors free from silica as described in 381,697, the hydroxides or oxides of calcium and (or) magnesium, with if desired aluminum hydroxide, are used as precipitants, while the alkalinity of the digester liquor is reduced by an amount approximately corresponding to the added calcium and magnesium oxide and hydroxide. The process may be used when the sodium hydroxide lye contains sodium sulphide, sodium sulphite, sodium sulphate, contact substances, phenols, organic oxy acids or the like.

1096. 397,787. AUG. 31, 1933. GEORGE H. TOMLINSON. RECOVERING ALKALI METAL COMPOUNDS FROM WASTE LYES.

Waste liquors from cellulosic pulp, especially sulphate pulp manufacture, are spray-dried in the upper region of a recovery chamber, combustion of the dried product being substantially confined to a combustion and reducing zone below the drying zone.

1097. 397,864. OCT. 26, 1933. BRUNO NEUHOF. LIGHT STONE, ETC.

Light stone, plaster, heat-insulating material, etc., is prepared by mixing mineral material such as lime, cement, clay, etc., with the waste sulphite or sulphate lye from cellulose manufacture. Alkali carbonates may be added.

1098. 410,940. MAY 31, 1934. BURT, BOULTON & HAYWOOD LTD., FREDERICK C. ELPHICK AND JAMES R. GRAY. FUNGICIDES.

Colloidal copper compounds are obtained in paste form by mixing, in the presence of a protective colloid, e.g., gum, casein in alkaline solution, waste sulphite cellulose liquor, gelatin or saponin, a copper salt solution with a solution of ions which form a copper compound insoluble in the mixture. The precipitate is then washed free from colloid and soluble salts and concentrated.

1099. 412,790. JULY 5, 1934. FREDERICK J. WALLACE. TANNING LIQUORS.

In the preparation of tanning liquor by the fermentation of sulphite cellulose liquor with acclimatized bacteria, there are obtained, by the breaking down of the hexoses, pentoses and pentosans, lactic acid, which may be allowed to remain in the liquor, or volatile liquids, particularly ethyl alcohol, butyl alcohol, mentyl carbonate, which are distilled off. Suitable bacteria are *Clostridium butyricum*, producing methyl carbonate and butyl alcohol, *B.aceto-ethylicum*, producing methyl carbonate and ethyl alcohol, *B.macerans*, giving the same products with more alcohol, *Clostridium acetonigenum*, producing methyl carbonate, and *B.butyricum*. Bacteria which produce lactic acid are *Lactobacillus pentoaceticus, L. bulgaricul, L. delbrückii and Streptococcus lactis.*

1100. 425,889. MARCH 25, 1935. LUDWIG KALB AND ERNST STRUPP. DESTRUCTIVE DISTILLATION OF CELLULOSE RESIDUES.

Hydrocarbons, e.g., tar oil, acetone, butanone and methyl alcohol are obtained by treating cellulose pulp waste lyes in a cyclic process comprising (1) concentrating the lye in vacuum evaporators, (2) agglomerating the concentrated lye with a solid residue obtained in the last stage of the preceding cycle, which comprises mainly lime, in a kneading apparatus (3) briquetting in a press, (4) subjecting to destructive distillation in a retort by direct contact with heating gases to obtain the desired products and a solid residue, (5) feeding the residue to a crusher, before or after removing the carbon on the grate of a steam boiler, and returning it to the kneading apparatus as in (2). Acidic lyes are neutralized by adding part of the solid residue before concentrating.

427,894. *See* U. S. 1,958,439.

German Patents

1101. 504,811. JAN. 12, 1927. CHEMISCHE WERKE. REVOLVING OVEN FOR THE EVAPORATION OF SOLUTIONS

The solution is pre-heated in a revolving oven which is heated by the combustion of the gases in the oven.

1102. 507,064. SEPT. 2, 1927. AKTIEBOLAGET SVENSKA MASKINVERKEN. APPARATUS FOR THICKENING OF LIQUIDS.

The patent describes an arrangement on apparatus for thickening of liquids as, for example, waste liquor from the pulp mills, salt solutions and similar solutions, with a rotating heating body, which consists of a tube perpendicular to the center axis, for leading in the steam. The object of the invention is to have the tube wound spirally around the axis on the same level, and to have a small diameter. For every spiral tube an inlet for the heating medium (stem), is provided at one end and at the other end is an outlet for the condensate.

507,523. AUG. 10, 1928. *See* British 317,040.

1103. 508,548. OCT. 22, 1927. WILLY EICKEL. FUEL BRIQUETS.

Smokeless and odorless burning briquets are made from powdered coal and binding materials such as sulphite-cellulose, molasses, etc., solution in water, the finished briquet being covered with an aqueous insoluble layer such as pitch, resin, etc.

1104. 512,957. MAY 31, 1927. METALLGESELLSCHAFT A.G. FRANKFURT, a. M. PROCESS FOR THE RECOVERY OF VOLATILE DISTILLATION PRODUCTS FROM THE RELIEF GASES FROM PULP DIGESTERS BY COOLING. (Addition to German 437,531).

The relief gases from the digester are so cooled in progressive stages, that first practically only steam separates off, then follows a water oil emulsion, then through the aid of the necessary artificial cooling the greater part of the oil is separated, whereupon the escaping gas is washed by the cooled oil and the gas then being led into a tower. The oil used for washing is that oil or fraction of it recovered during the process. The cooling of the oil is carried out

by the cooling medium, which feeds the gas or sprinkler tower water cooler, or a part of the same before its entrance to the said cooler. Several digesters possess a mutual intensive cooling system with a wash apparatus, with separate precoolers. In order to increase the washing action the washing tower is provided with special spiral sprays.

1105. 513,755 JAN. 15, 1927. I. G. FARBENINDUSTRIE AKT. GES. FRANKFURT, a. M. PROCESS FOR THE RECOVERY OF CAUSTIC SODA FROM ALKALI LIQUORS CONTAINING ORGANIC IMPURITIES.

The liquors are treated with oxygen or gases containing oxygen at temperatures above 100°. The principle of the invention is that an oxygen pressure of more than one atmosphere comes into use whereupon the alkali carbonate formed is changed over into hydroxide in the usual manner, preferable with chalk.

1106. 514,240. AUG. 6, 1925. J. R. GEIGY A.-G. TANNING.

Skins are partly tanned by means of hydroflurosilicic acid or its salts, the tanning being completed simultaneously or subsequently by means of vegetable, mineral or synthetic tanning agents, or sulphite cellulose lye, or mixtures of these. Examples are given.

1107. 514,874. JULY 7, 1925. J. R. GEIGY A.-G. TANNING SKINS.

The depilated skins are treated with mineral acid and neutral or basic chromium, aluminum or iron salts. They are then treated, in the same bath or in a separate solution, with neutral synthetic tanning material, the solubility of which, in water, depends on the presence of the bisulphite group. Sulphite cellulose lye may be also used for further steeping of the skins.

1108. 515,018. JUNE 10, 1927. ERIK HÄGGLUND. CELLULOSE.

In the manufacture of cellulose by digesting wood with sodium hydroxide solution, a part of the black liquor by-product is returned to the digester, without causticizing, after its organic constituents have been destroyed by heating it to about 350° under 200 atmospheric pressure.

516,566. *See* British Patent 263,520.

518,062. JUNE 24, 1928. *See* United States Patent 1,680,540; British Patent 273,267.

1109. 519,245. APR. 25, 1929. ZELLSTOFFFABRIK WALDHOF AND MAX GADE. DISTILLING SULPHITE LIQUOR SPIRIT.

The first runnings, which contain the aldehyde fraction, are continuously or periodically returned to the vats in which a fresh wort is fermenting or is to be fermented. The spirit obtained from a wort to which the first runnings have been added contains only the normal amount of aldehyde, the aldehyde in the runnings being eliminated in the fermentation.

1110. 519,267. FEB. 10, 1929. OSKAR A. MÜLLER. TANNING AGENT.

Ligneous cellulose materials are chlorinated while moist and then extracted with a water-soluble organic solvent, e.g., ethyl alcohol, in the presence of a strong mineral acid. The extract is freed from chlorolignin by precipitating this with water, and the organic solvent is removed by distillation. The tanning agent can then be extracted from the aqueous residue with ethyl acetate, or precipitated therefrom with barium hydroxide.

1111. 519,694. DEC. 14, 1926. CHARLES L. WAGNER. RECOVERY OF CHEMICALS FROM LIQUORS USED IN WOOD-PULP MANUFACTURE.

The liquor is atomized, distilled and burned. Apparatus is described.

1112. 522,730. JAN. 1, 1929. CARL G. SCHWALBE. SILICA REMOVAL FROM CELLULOSE LIQUORS.

Silica is removed from alkaline cellulose lye used in the working up of straw, bamboo, reeds, etc., by leading in carbon dioxide, heating under pressure and filtering.

1113. 523,485. MAR. 23, 1928. SOCIÉTÉ PROCÉDÉS NAVARRE. WORKING UP SODA-CELLULOSE LYES.

Sodium hydroxide is recovered from soda-cellulose lyes by evaporating and calcining the lyes, extracting the residual salts with water and causticizing the resulting solution with calcium hydroxide. The improvement consists in removing silica from the solution before causticizing by treating it with carbon dioxide, and, if necessary, with sodium bicarbonate, the conditions being so adjusted that the ratio of sodium bicarbonate to sodium carbonate in the solution amounts eventually to about 0.44, at which point the maximum separation of silicon dioxide occurs. After filtering the precipitated silicon dioxide, the solution is heated to recover carbon dioxide and the causticized.

1114. 523,524. JULY 10, 1925. CARL LEYST-KÜCHENMEISTER. FERTILIZER.

Waste lye from the calcium carbonate extraction from straw, rice or corn straw, bamboo, etc., is rendered suitable for use as fertilizer by dilution with water.

1115. 524,210. JAN. 29, 1929. DIAPONFABRIK HERBERT KRULL G. M. B. H. DEPILATORIES FOR HIDES AND SKINS.

Hides and skins are depilated with sodium sulphide solutions containing one or more sugars and lactic acid, with or without purified sulphite cellulose lye. A suitable bath contains water 5270, sodium sulphide (30%) 50, glucose 25 and maltose 18 parts, with 0.4-0.65% of lactic acid.

1116. 524,851. APRIL 19, 1921. ROBERT WEBER AKT. GES. DRENTWEDE. PROCESS FOR THE RECOVERY OF CLEAN PAPER STOCK FROM OLD PRINTED PAPERS FROM THE USE OF WASTE LIQUORS FROM THE COOKING OF PULP.

The waste liquor is treated with earth alkali hydroxides, for example, calcium hydroxide before its use in the process. According to claim number 2, the acid waste liquors for example, sulphite waste liquor, is treated with alkali salts, for example, alkali sulphate. According to claim number 3, the alkali waste liquors, for example, sulphate or soda waste liquors, are calcined and the water-soluble residue is then used for the treatment of the old paper.

525,068. OCT. 22, 1927. *See* British Patent 286,808.

1117. 526,491. JULY 19, 1928. FIRMA EWALD DÖRKEN. COATING COMPOSITION.

Use is made of the esters of polyhydric alcohols or phenols with the tall oil or liquid resin obtained from the soda cellulose process. The esters may be used in solution of benzine, etc., with or without addition of drying oils, pigments, driers, etc. Examples are given.

1118. 527,076. MAR. 14, 1926. CARL G. SCHWALBE. TREATING SULFITE CELLULOSE WASTE LYE.

The diluted crude or desaccharified lye is treated with sulphuric acid in an amount not exceeding that corresponding to its calcium content, and then heated to 180° under 10 atmospheres pressure, preferably after removing the precipitated calcium sulphate. The organic constituents of the lye are thus carbonized. Lactose, lactic acid or cellulose waste may be added to the lye before heating. Any residual organic matter in the treated lye can be removed by repeating the treatment in the presence of adsorption carbon, clay or the like.

1119. 527,128. FEB. 15, 1929. PATENTAKTIEBOLAGET GRÖNDAL-RAMÉN. REGENERATING ALKALI SULPHITE LYE FOR CELLULOSE MANUFACTURE.

The spent lye is evaporated to dryness before subjecting it to a known recovery process. The latter comprises fusion with calcium carbonate and extraction of the product with water to give a solution of sodium carbonate, which is treated with sulphur dioxide.

1120. 527,547. JULY 12, 1928. EMIL HENE. ACTIVE CARBON.

Fine porous indifferent carriers are impregnated with carboniferous material, such as cellulose solution, glue, starch, lignose, etc., and metal halide solution or strong inorganic acids, and burned. The carbon deposited in the carrier is active. The carboniferous material is present in such amount that the deposited carbon forms a not more than 1% ratio with the carrier. Wood charcoal is mentioned as a carrier.

1121. 527,800. APR. 16, 1925. I. G. FARBENINDUSTRIE A.-G. PRODUCTS FROM WASTE SULPHITE-LIQUOR LYE.

A powder stable in air, is obtained by evaporating waste sulphite-liquor lye at temperatures above 150°. The powder is useful in tanning and dyeing processes.

1122. 529,064. JAN. 14, 1930. EBERHARD HOESCH & SOHNE. ROTATING DRUM FOR THE EVAPORATION, DRYING, ROASTING, CALCINING AND SIMILAR PROCESSES.

The rotating drum is characterized by having heated coils fused in the drum itself or placed between a double lining.

1123. 529,065. JUNE 18, 1927. EINAR MORTERUD. ARRANGEMENT FOR THE HEATING OF A LIQUID, THAT IS THE EVAPORATION OF A LIQUID BY THE USE OF STEAM CURRENTS.

The invention is a combination of two known processes.

1124. 529,099. MARCH 25, 1930. PATENTAKTIEROLAGET GRÖNDAL-RAMÉN. CELLULOSE.

In the manufacture of cellulose by boiling vegetable fiberous materials with alkali bisulphites or hydroxides, the spent lyes are evaporated and burnt, and the residue is roasted at 240-500° in order to decompose its sulphide and thiosulphate content. The roast is extracted with water, and the extract is converted into alkali bisulphite or hydroxide in known manner.

1125. 534,233. MAY 20, 1927. PAUL KNICHALIK. CELLULOSE.

Black liquor from the soda-cellulose process is concentrated and mixed with a sludge of calcium carbonate, obtained as described below, and with finely granular or pulverulent fuel, e. g., sawdust or powdered coal. The mixture is heated to 1200-1300°, giving a mixture containing calcium oxide and sodium carbonate, which is extracted to yield a sludge of calcium carbonate and a solution containing sodium hydroxide and sodium carbonate. Fresh lye for the cellulose manufacture is prepared by adding sodium sulphide to the sodium hydroxide-sodium carbonate solution. The sodium sulphide is prepared by reducing sodium sulphate, suitably by means of the carbonaceous incrustations which separate during the concentration of the black liquor.

1126. 535,744. FEB. 10, 1929. OSKAR A. MÜLLER. CHLOROLIGNIN.

Material containing lignin is moistened and treated with chlorine. The chlorolignin produced is extracted by an organic solvent miscible with water in the presence of hydrochloric acid. The extraction is carried out at high temperatures to ensure a quantity yield of chlorolignin. The latter is obtained from the extract directly by treating with water, or by distilling off the organic solvent. An example describes the extraction of chlorolignin from pine-wood sawdust.

1127. 537,845. Nov. 12, 1927. I. G. FARBENINDUSTRIE AKT. GES., FRANKFURT, a. M. PROCESS FOR THE RECOVERY OF CAUSTIC SODA FROM ALKALI LIQUORS CONTAINING ORGANIC IMPURITIES. (Addition to German 513,755).

In carrying out the main patent further, the oxidation takes place in the presence of the usual oxides of barium or strontium as the causticizing means.

1128. 538,254. AUG. 26, 1930. EINAR MORTERUD. LUBRICATING AND SEALING AGENT.

Evaporated cellulose waste lye is used as a lubricating and sealing agent for the stuffing boxes of circulating pulps for cellulose digesters.

1129. 539,165. APRIL 5, 1928. CHEMISCHE FABRIKEN KURT ALBERT G. M. B. H. ROAD-MAKING MATERIALS.

Compositions comprising an emulsion of bitumen, resin, wax, etc., and a mineral filler are prepared by mixing the filler, the bitumen, etc., and water in the presence of an emulsifying agent, e. g., evaporated sulphite cellulose lye. An example is given.

1130. 540,233. MAY 20, 1927. PAUL KNICHALIK. CELLULOSE.

Black liquor from the soda-cellulose process is concentrated and mixed with a sludge of calcium carbonate. obtained as described below, and with finely granular or pulverulent fuel, e. g., sawdust or powdered coal. The mixture is heated to 1200-1300°, giving a mixture containing calcium oxide and sodium carbonate, which is extracted to yield a sludge of calcium carbonate and a solution containing sodium hydroxide and sodium carbonate. Fresh lye for the cellulose manufacture is prepared by adding sodium sulphide to the sodium hydroxide-sodium carbonate solution. The sodium sulphide is prepared by reducing sodium sulphate suitably by means of the carbonaceous incrustations which separate during the concentration of the black liquor.

1131. 540,841. JULY 3, 1928. I. G. FARBENINDUSTRIE AKT. GES. PURIFICATION OF WASTE ALKALI LIQUORS CONTAMINATED WITH ORGANIC SUBSTANCES.

The organic substances are removed by the treatment of the waste liquors with oxidation means. Alkali manganate or alkali permanganate are used as the oxidation means.

1132. 541,256. AUG. 4, 1929. ERIK LUDVIG RINMAN. TREATING WASTE LIQUORS FROM SODA OR SULPHATE PULP MANUFACTURE.

The waste liquors are treated with the oxide or hydroxide of barium or strontium or a mixture of the two.

1133. 542,587. MAY 11, 1929. WILHELM SCHULTZ. PRINTING INKS.

Non-corrosive printing colors are prepared from sulphite cellulose waste lye as starting material by neutralizing this and adding oil or fatty acid. Pigments such as rouge, or coal-tar blue, are added, with seccative and glycerol.

1134. 544,154. FEB. 28, 1930. PROCÉDÉS NAVARRE SOC. ANON. TREATING WASTE LYES FROM THE SODA CELLULOSE PROCESS.

Method of removing silicic acid from the waste liquors.

1135. 546,315. Nov. 4, 1927. PAUL KNICHALIK. TREATING SULPHITE-CELLULOSE LYE.

Sulphur dioxide is removed by releasing the pressure on the lye coming from the digesters, and then rewarming the lye to such a temperature that it boils violently when fed to the last stage of a multiple-effect evaporator. Apparatus is described.

1136. 546,940. AUG. 27, 1925. METALLGESELLSCHAFT AKT. GES., FRANKFURT a. M. ARRANGEMENT FOR THE EVAPORATION OF SOLUTIONS.

The arrangement is for solutions in which salts separate out. The materials to be evaporated is sprayed into the evaporation chamber.

1137. 546,941. FEB. 25, 1928. MAX STEINSCHNEIDER AND AKT.-GES. FÜR ZELLSTOFF-UND PAPIERFABRIKATION. PRODUCTS FROM LIGNIN OR ITS DERIVATIVES.

Lignin and its derivatives or materials containing lignin, such as cellulose waste lye, are converted into technically useful products by heating in non-aqueous alkali solution at temperatures above the boiling point of alcohol.

The process may take place in an atmosphere of hydrogen, in the presence of a catalyzer and under increased pressure. Examples are given.

1138. 549,783. Dec. 22, 1929. Bror Natanael Segerfelt. Process and device for the removal of obnoxious gases formed during the recovery process in the soda and sulphate pulp manufacture.

The gases formed during the treatment of the waste liquor and relief gases are cooled to their dew point or saturated with water and then dissolved in an aqueous solution of alkali or emulsified hydrocarbon of the terpene or camphor groups or with addition compounds of such hydrocarbons. According to claim number 2, the treatment takes place under vacuum or lower excess pressure; and according to claim number 3 the treatment takes place at temperatures between 20 and 120° C.

1139. 550,570. Jan. 17, 1931. Patentaktiebolaget Gröndal-Ramén. Alkali sulphite and bisulphite solutions.

Solutions of alkali sulphite and bisulphite are obtained from waste sulphite and sulphate pulp lye by burning off the organic constituents, and removing sulphide and thiosulphate by addition of calcium carbonate and sulphur dioxide.

1140. 550,759. Feb 10, 1929. Oskar A. Müller. Alkali salts of chlorolignin.

Chlorolignin obtained by the method of 535,744, (i.e., by extraction of material containing lignin with organic solvent solution in water, and treating the extract with chlorine), is treated with excess of concentrated alkali solution. The alkali salt of chlorolignin is precipitated and can be decomposed by acid. Thus, moistened pine wood sawdust is chlorinated and extracted with alcohol. The extract is treated with 40% sodium hydroxide. The precipitate is separated, washed with alcohol, and dissolved in water. Treatment of this with mineral acid gives a precipitate of chlorolignin.

1141. 551,437. Feb. 6, 1930. I. G. Farbenind. A.-G. Fertilizers.

Use is made of the waste lyes obtained in the manufacture of cellulose by digesting wood, etc., with ammonium bisulphite or other suitable nitrogenous compound. The lyes are evaporated to dryness and the product is ground. An oxidizing agent may be added, before or during evaporation, to convert sulphite into sulphate. Alternatively, waste lyes from the digestion of wood with sulphurous acid or nitric acid may be neutralized with ammonia and evaporated.

1142. 552,887. Sept 28, 1928. Hermann Pauly and Kurt Feuerstein. Vanillin.

Vegetable fiber of lignin (natural or synthetic) is oxidized at temperatures below 90° and preferably between 10° and 50°. The amount of oxidizing agent should correspond approximately to the amount of vanillin and the product may be hydrolyzed after oxidation.

1143. 553,235. Oct. 24, 1930. Carbonfix. Carbon.

Waste liquor from the manufacture of cellulose, particularly black liquor, is treated with acid to precipitate crude lignin, which is then carbonized by treatment with hot acid, e.g., sulphuric acid, (density 1.82) at 165-200° The product is treated with potassium carbonate or sodium carbonate solution, washed, and finally treated with acid if desired. Prior to carbonization, the lignin may be treated with turpentine to remove resin, and further treated with hydrogen fluoride and sodium hydroxide solution, if desired. Carbon practically free from ash is obtained.

1144. 553,413. Oct. 16, 1930. I. G. Farbenind. A.-G. Fertilizers.

Sulphite cellulose waste lye is treated at a raised temperature, e. g., 130 deg., with air or oxygen or other oxidizing agent in the presence of an alkali or alkaline earth. An example is given.

1145. 553,967. Nov. 15, 1927. Industriekemiska Aktiebolaget. Cellulose lye.

Lye from the preparation of cellulose is thickened by passing hot gas therethrough. Apparatus is indicated.

1146. 554,748. Jan. 9, 1929. Guy Clemens Howard. Method for separation of inorganic and organic materials from sulphite waste liquor.

Inorganic and organic compounds are precipitated from sulphite waste liquor by precipitation with lime, the lime being added in small amounts and the precipitate separated after each addition.

1147. 554,826. April 16, 1930. Patentaktiebolaget Gröndal-Ramén. Sulphite pulp.

Chopped-up wood is soaked in a fresh solution of alkali bisulphite containing no added sulphur dioxide and digested with a liquid which produces the necessary amount of free sulphur dioxide from the lye; the waste liquor or wash water from a previous cook may be used.

1148. 555,769. July 10, 1930. Courtaulds, Ltd. Removing sulphur from waste water containing alkali sulphide.

1149. 555,743. June 1, 1929. Hundt & Weber G. m. b. H. Apparatus for purifying the waste water from paper and pulp manufacture.

Details of a centrifugal purifier are given.

1150. 554,748. Jan. 9, 1929. Guy C. Howard. Sulphite pulp waste.

Plant is described for obtaining organic and inorganic materials from sulphite pulp waste lye by precipitating sulphite and lignin by addition of calcium oxide.

1151. 557,445. Aug. 13, 1930. Erik Rinman. Process for the manufacture of valuable products from vegetable materials.

The valuable products are obtained from the raw materials by cooking with solutions of barium or strontium hydroxide. According to the patent the cooking is carried out with solutions of one of these substances or a mixture of both so that after the cooking the alkalinity is at least 10 per cent, calculated as barium oxide, the resulting material is evaporated to dryness and subjected to dry distillation.

557,446. June 5, 1930. (Addition to 541,256). *See* British Patent 354,951.

1152. 558,705. April 24, 1928. Bror Natanael Segerfelt. Concentrating waste lye from the manufacture of cellulose.

Waste lye from the process of digesting cellulosic material with acids or alkalies is concentrated in a diffuser and added to fresh lye.

1153. 561,487. Feb. 18, 1930. I. G. Farbenind. A.-G. Fertilizer.

Sulphite cellulose lye is treated with ammonia and then heated under pressure to a temperature below 200 deg. The product is dried and powdered. Oxidizing gases may be supplied during the reaction, but conditions causing carbonization must be avoided. Peat, sawdust, etc., may be added to the lye before heating. The process is particularly useful with waste lyes from the manufacture of cellulose by the ammonium sulphite or ammonium bisulphite process.

1154. 563,758. Jan. 27, 1929. A.-G. Für Zellstoff- und Papierfabrikation. Preparing sulphite cellulose waste lye for fermentation.

Sulphur dioxide is liberated in the lye by adding a little mineral acid, and the lye is then intensively aerated until all the sulphur dioxide has been removed.

(To be continued)

Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Mechanical Process

Grind Stone for Wood, Composed of Ring Shaped Segments. Trygve Kittelsen, Oslo. Nor. pat. 54, 232 (Sept. 28, 1932).—The three ring-shaped segments of the stone are arranged along side of each other. The middle segment becomes narrower towards the axis of the stone. —J. F. O.

Device for Holding the Depth of Submergence of Grinder Stones Constant. Firma J. M. Voith, Heidenheim. Ger. pat. 605,218 (June 4, 1933).—The dam board in the grind stone pit is connected by a chain to the feed mechanism of the grinder.—J. F. O.

Arrangement for the Fine Screening of Ground Wood by Repeated Washings. Firma J. M. Voith, Heidenheim. Ger. pat. 605,477 (May 1, 1932).—Addition to Ger. pat. 600,219.—J. F. O.

Process for the Manufacture of Pulp or Half-Pulp by Chemical Decomposition from Wood Especially Rich in Rosin. Hofasto Akt. Ges., Hergiswil, Switzerland. Ger. pat. 607,037 (Sept. 20, 1933).—Ground wood which has been washed free from fiber slime and "flour" is used as the starting product and because of the form it is in, it is very readily acted upon by the chemicals. According to the patent the greater part of the rosin is removed with the washing.—J. F. O.

Performance of an Experimental Wood Pulp Grinder. W. Brecht. Papier-Fabr. 33, No. 13:113-118; No. 14:121-126; No. 15:129-130 (March 31, April 7, 14, 1935).—An exhaustive study of certain variables of an experimental wood pulp grinder carried out during the past two years. The paper is divided into the following topics; description of the experimental wood pulp grinder, the stone being 60 cm. in diameter and 15cm. wide, method for measuring the wood pressure on the stone, studying the cold grinding process with details described, influence of the grinding pressure, curves and data on physical tests, influence of the peripheral speed of the grind stone, influence of the length of the grinding zone, manufacture of longitudinal, diagonal and cross section ground wood by the hot and by the cold processes with photo-micrographs of each. The above variables were all studied with the hot process as well, together with the influence of temperature and consistency of stock in the grind stone trough, and in conclusion there is a recapitulation of the results and their significance.—J. F. O.

Fungi in Groundwood Pulp. O. Bades. Papier-J. 23, no. 4:39-44 (March 22, 1935).—During the year 1934 a number of the most modern Norwegian groundwood mills experienced an unusual amount of fungus growth on their stored product. Experiments were made with different grinding temperatures between 40° and 60° C, the pulp was allowed to cool in some instances before being baled or was baled immediately in still warm condition, stored and tested for infection after periods of different length. Pulp ground under 50° C was of excellent quality even after three months storage, while pulp ground at higher temperatures showed various degrees of infection. Bales subjected to a cooling process were much more infected than those baled in a still warm or hot condition. Another series of investigations, however, showed the somewhat contradictory fact that the number of spores was much higher in pulps ground at low temperatures, 102,000 spores having been determined in one gram of pulp ground at 42° C and only 11,400 in that ground at 60° C. The storage temperature also affects fungus growth. An infected pulp sheet placed inside a sound bale did not affect the surrounding layers when stored at 0° C, whereas quite marked infection took place at a storage temperature of 20° C, regardless of whether the pulp had been ground at 45° or 60° C. Infection always attacks the outside layers of the bale first and the center last. The investigations are being continued.—C. J. W.

Comparative Observations of Low Consistency Hot Grinding and High Consistency Hot Grinding. Walter Brell. Wochbl. Papierfabr. 66, No. 7:121-22 (Feb. 16, 1935).—Higher temperatures decreases the tendency for fungus and slime growth. Warm water can be used to advantage in heating the wood in the magazines thus giving a softer fiber due to the slight swelling of the wood before grinding. Low consistency aids in preventing the stone from becoming slippery due to fibers adhering.—J. F. O.

Fungi in Groundwood Pulp. P. Klem. Papier-J. 23, no. 5:47-49 (March 30, 1935).—Referring to the above article by Bades, Klem explains the poor results obtained at high grinding temperatures (50-60° C) by the fact that low temperatures require larger fresh water additions, reducing the danger of slime infection always present in closed white water systems without adequate means of control. During recent years, modern mills nearly everywhere have adopted more or less closed white water systems, hence the prevalence of infection amongst this group.—C. J. W.

The Composition and Properties of the Cementing Material Obtained As a By-Product in the Manufacture of Wood Fiber Mass. A. Lottermoser and T. Wilhelmi. Kolloid-Beihefte 41, no. 11-12:393-416 (May 10, 1935).—The cementing material (fiber mucilage or wood flour) is richer in alcohol-benzene products than the groundwood and the wood fiber mass but all three products have the same lignin content. A study on the effect of the electric charge of the addition of various amounts of electrolytes shows that the effect of salts is the same as with other negative colloidal sols. The effect increases with the valence of the kation, so that very small amounts of three- and four-valent kations are sufficient to discharge or reverse the charge on negative particles of the sol. Sodium hydroxide charges the suspension negatively. The higher valent kations are able to flocculate the sols, on which the anions have hardly any effect. Hydrochloric acid acts as a strong flocculating agent. The absorptive power of the cementing material is very small. On account of its high resin content the wood flour may eventually be used as sizing agents. The presence of very small fibers and fiber fragments makes possible the use of this substance as an admixture to papers where a very smooth and closed

surface is required, resulting in a less transparent sheet. A better felting of the fibers and a higher strength of the sheet may be obtained by the addition of certain electrolytes which increase the swelling of the fibers.—C. J. W.

Use of the Stop Watch in Supervision of the Production of a Groundwood Mill. H. Pellinen. Finnish Paper and Timber J. 16, no. 23:966-968, 970-972 (Dec. 15, 1934). The degree of grinding as determined by the Schopper-Riegler freeness tester does not correspond as closely to variations as does the Mullen strength, due to the decrease in accuracy of the freeness tester with increased degree of grinding. Time of filtration through an ordinary test-sheet machine is shown to be much more accurate in the range above 70° S. R. and a formula for calibration and elimination of errors is suggested. Observations of Mullen strength and time of filtration are compared for three types of grinders.—C. J. W.

Beating

Hydration of Vegetable Fibers in Beating and its Influence on the Strength of Paper. Ya G. Khinchin. Bumazhnaya Prom. 13, no. 12:22-32 (1934); C. A. 29: 2740.—The discussion is based on the work of Cottrall, Kress and Bialkowsky, Harrison and others—C. J. W.

The Effects of Refining Action. D. Manson Sutherland. Paper Trade J. 100, No. 22:34-36 (May 30, 1935). —Attention is called to the need for simplification of terms used in stuff preparation and suggestions are made to this end. Refining action on pulps changes the fiber size, shape and flexibility, which are affected by the chemical and physical properties of the pulp and which can be determined by classification or screening tests.—A. P.-C.

A Departure from Standard Beating Principles. R. M. Radsch. Paper Mill 58, No. 9:16-19 (March 2, 1935). —A brief description of the construction and operation of the Vortex beater, developed at the Thilmany Pulp and Paper Co., Kaukauna, Wis., with a discussion of its performance and merits.—A. P.-C.

The Nature of Colloidal Water in Paper Making. James Strachan. Paper Maker & Brit. Paper Trade J. 89:TS49-50 (April, 1935).—An explanation of the difference between the "water of hydration" of beaten pulp and ordinary water.—A. P.-C.

Toledo Beater Control. G. D. J. Ormsbee Paper Trade J. 100, No. 23:33-37 (June 6, 1935).—An outline of various means that are used to measure and regulate beater roll action, together with a description of the Toledo beater scale and of its performance.—A. P.-C.

Process and Apparatus for Pulping Fibrous Materials. de la Roza Corp. Fr. pat. 778,828 (Sept. 20, 1934).—Apparatus for the continuous pulping of cellulosic material comprises a substantially horizontal cylindrical vessel of every considerable length relatively to its diameter. The inlet is in the form of a slightly tapered tube having its smallest end at the digester and communicating at its larger end with a cylinder in which is mounted a reciprocatable piston. The material is fed into the cylinder and is compressed by the piston to a density of up to 30 lb. of dry matter per cu. ft. Pipes leading respectively into the vessel near the inlet end and out of the vessel near the discharge end are provided with check valves that permit the liquor only to enter at the inlet end and to flow out of the vessel at the discharge end. The rates of feeding and discharging the materials are controlled automatically by means of the level of the material in the digesting apparatus. During the whole of the digesting process the material is compressed to a volumetric density exceeding 12 lb. (dry substance) per cu. ft.—A. P. -C.

Beating and Refining Engine. Fritz Arledter. Brit. pat. 421,985 (Jan. 3, 1935).—A pulping engine, suitable also for bleaching, sizing, filling and dyeing, comprises a stationary trough substantially spherical in shape and a barrel-shaped roll contacting with the trough over practically its whole length.—A. P. -C.

Paper Pulp Beaters. Ernst Schmidt. Brit. pat. 422,-307 (Jan. 9, 1935).—In a beating engine for half-stuff, waste paper, etc., pulp is drawn from the trough, etc., and forced by a pump through spaces between the bedplate bars and against the beater roll. The bars of the roll have teeth extending between similiar teeth on the bedplate bars, the effective grinding surface of the bars being thus increased.—A. P. -C.

Device for the Decomposition and Treatment of Materials Containing Cellulose in Revolving Digesters. Uddeholms A. Bol., Uddeholm. Swed. pat. 81,615 (June 28, 1932).—The circulation system for both the gas and the liquor is kept going while the digester is revolving.—J. F. O.

Device for the Treatment of Materials Containing Cellulose in Revolving Digestors. Uddeholms A. Bol., Uddeholm. Swed. pat. 81,616 (Nov. 17, 1932).—The patent concerns the improvement of the circulation and the intimate mixing of the material to be cooked and the cooking liquor. To achieve this, several part containers are placed inside the digester and allowed to rotate together with the digester.—J. F. O.

Beater With Spherical Roll and With a Bed Plate to Fit. Emile Mense, Gadagne, France. Ger. pat. 606,-552 (March 25, 1932).—J. F. O.

Bleaching

Bleaching Experiments. S. Samuelsen. Papir-J. 23. no. 3:29-30 (Feb. 28, 1935).—The quantity of chlorine consumed during bleaching to satisfactory whiteness is used by the four following steps of the process: dissolving of the incrustants; further oxidation of the incrustants; attack on cellulose; and eventual destruction of coloring substances which cannot be included in the lignin group. The dissolving of incrustants with lowest chlorine consumption and decomposition is obtained with an acid bleach followed by an alkaline wash of a pH not less than 10. A satisfactory whiteness of the pulp can only be obtained with an additional alkaline bleach of a pH higher than 6.5, the chlorine consumption in this stage being quite small. The final washing is of greatest importance for the whiteness of the product. The bleached pulp can be fractionated into a fiber section of very great whiteness and a flour section of very low whiteness. Maximum whiteness cannot be obtained without a simultaneous fiber loss which amounted in the author's case to 5 percent of the bleached pulp.—C. J. W.

Modern Cellulose Bleaching. V. Sommer. Finnish Paper and Timber J., Special Issue:318-324 (1935); C. A. 29:4573.—A modern bleaching establishment has been installed at Jámsámkoski. Three-stage bleaching is used, beginning with liquid chlorine and using chlorinated lime for the final bleach (Mathieson method). The equipment and process are described in some detail.—C. J. W.

The bleaching department at Jámsámkoski mill. V. Sommer. Finnish Paper and Timber J., Special Issue: 267-268 (April, 1935).—C. J. W.

Bleaching Wood Pulp. II. The Hydrogen-ion Concentration of the Bleaching Liquor, the Effect of Bleaching on the Chemical Properties of the Pulp and the Bleaching Loss. Imakichi Nakashima and Sinjiro Oinuma. Cellulose Ind. (Tokyo) 10:283-289; *Abstracts* (in English) 53-56 (1934).—On addition of 5 to 6 percent chlorine, the pH values of the bleaching liquor decrease gradually with the progress of the bleaching; the con-

centration of chlorine being raised from 1 to 9 percent the ash content of the pulp increases slightly, the alpha-cellulose content remains constant up to 3 percent of chlorine concentration, beyond which it decreases, the copper number is minimum at 2 percent and the bleaching loss increases gradually but does not exceed 6 percent under optimum condition. The alpha-cellulose content decreases, while the copper number and the bleaching loss increase with rise of the bleaching temperature. Prolonged bleaching causes degradation of cellulose and raises the copper number; this shows that after the bleaching has proceeded to a certain degree the excess of the reagent still remaining in the liquor oxidizes the cellulose. Increase in the pulp consistency lowers the alpha-cellulose content and raises the copper number. The bleaching loss with the large amount of chlorine used increases, remaining within 6 percent under the ordinary conditions. The highest tensile strength, 4.3 kilos, and the maximum bursting strength, 1.98 kilos per sq. cm., are attained when 2 and 3 percent chlorine are added, respectively. Bleaching at about 30° to 35° C with 5 to 11 percent chlorine gives the highest strength.—A. P.-C.

Bleaching Wood Pulp. Ivan H. Andrews assignor to Powell River Co., Ltd. Can. pat. 347,561 (Jan. 15, 1935).—Wood pulp is heated for 15 to 350 mins. with 0.5 to 2.0 percent of a hyposulphite, in particular zinc hyposulphite, to 130° to 190° F. and then cooled to about 110° F.—A. P.-C.

Bleaching Pulp. Seisuke Kodama. Japanese patent 109,475 (Feb. 4, 1935); C. A. 29:4582.—Two-thirds of the whole bleaching process is conducted in a solution of lime or bleaching powder, into which excess of chlorine is previously introduced. Then the pulp is washed with water and the bleaching is finished with an alkaline solution of hypochlorite.—C. J. W.

Treatment of Unbleached Sulphite Pulp. Oji Seishi K. K. (Seisuke Kodama, inventor). Japanese Patent 109,940 (March 15, 1935); C. A. 29:4940.—Before bleaching with bleaching powder or chlorine, the pulp is treated with lime water until the solution becomes weakly alkaline; economy in the amount of the bleaching reagent required is thus effected.—C. J. W.

Process for the Continuous Manufacture of Aqueous Solutions of Hypochlorous Acid. G. Ornstein, Berlin. Swed. pat. 81,897 (Nov. 10, 1933).—The manufacture takes place through the action of chlorine and water in a spray tower filled with calcium carbonate rocks. The solution is allowed to circulate in the tower until all the free chlorine present changes over to hypochlorous acid.—J. F. O.

Process and Arrangement for the Continuous Treatment of Fibrous Materials with Decomposing and Bleaching Gases. A. E. Branzell, Karlstad. Swed. pat. 82,002 (June 20, 1932).—The diminuted moist material is pressed together before its treatment with gas and then in the presence of the decomposing and bleaching gases it is broken up and finely divided. The action takes place by the counter current system.—J. F. O.

Process and Device for the Continuous Bleaching of Pulp. C. B. Thorne, Hawkesbury, Canada. Nor. pat. 54,063.—J. F. O.

Coatings and Fillers

Starch in the Paper Industry. M. Marini. Ind. Carta 2, no. 3:133-138 (March, 1935).—The article discusses the chemical and physical properties of different raw and modified starches (soluble and gelatinized), their applications in the paper industry and their effects upon the finished product.—C. J. W.

Preventing Foaming of Kaolin-Casein Coatings for Paper. Werner Esch. Gelatine, Leim, Klebstoffe 2:51-52 (1934); C. A. 29:3833.—The addition of 2 percent (based on the weight of casein) of "Rubberine Gel" is recommended as a method of reducing the foaming of kaolin-casein suspensions used in paper coatings. This gel is a proprietary by-product from the rubber industry.—C. J. W.

Use of Chalk as a Paper Filler. P. Zotov. Bumazhnaya Prom. 14, no. 1:33-43 (1935); C. A. 29:4173.—The influence or various factors on the retention of ground and precipitated chalk filler and the quality of the resulting paper have been studied for several years on commercial scale production. The experiments with the production of writing and printing papers No. 3 were made with a mixture of 30 percent chemical pulp, 30 percent straw pulp, 30 percent wood plup and 10 percent waste paper. Chemical pulp was substituted for the waste paper in the experiments intended for the exact calculation of the retention of chalk; this was done by the Chinchin method. Chemical pulp and some wood pulp, beaten to 25-30° freeness, were mixed with the remaining wood pulp and straw pulp and with size alumina and filler in the order given and then beaten to 40-45° freeness. The mean retention of chalk by sized paper (writing paper of 65 gram/square meter) is 40 percent, that of unsized paper (printing paper of 65 grams/square meter) is 22.5 percent based on 100 percent chalk. With the increasing weight of paper the retention of chalk rises up to 50 percent. (165 grams/square meter). The mean retention of precipitated kaolin is greater than that of chalk by 31.9 percent in writing paper and 32.8 percent in printing paper. The consumption of size and alumina by paper filled with chalk is greater than that filled with kaolin. The mechanical properties of writing and printing papers filled up to 40 percent with chalk satisfactory. While ground chalk can be used as a filler in the production of commercial and lower grades of writing and printing paper, it is not suitable for the high grades of paper, because of the mechanical impurities and sand (up to 3 percent) which affect the quality of paper and cannot be removed by any other mechanical means than precipitation in water. The sand in chalk causes also considerable damage to the equipment. The cost of precipitated chalk as a filler is higher than that of precipitated kaolin.—C. J. W.

The Manufacture of Titanium Pigments and Their Use in Paper Making. I. E. Weber and W. Woodhall. World's Paper Trade Rev. 103: 1155-1160, 1198, 1200, 1236, 1238, 1276, 1278, 1312, 1314 (April 12, 19, 26, 1935).—A description of the manufacture of titanium pigments, of their methods of analysis which may be of use to the paper trade, with a discussion of their possible uses and merits in paper making.—A. P.-C.

Coating Composition for Paper. R. F. McKay, from International Latex Processes, Ltd. Brit. pat. 425,491 (May 25, 1934).—China clay or other finely-divided mineral is incorporated with an adhesive (casein) and an aqueous dispersion of rubber; drying-out is prevented by adding a non-colloidal, poly-hydroxy-aliphatic, hygroscopic agent, *e. g.* triethanolamine.—A. P.-C.

Coating of Surfaces and Manufacture of Coated or Compound Sheet Materials. G. Smith. Brit. pat. 424,871 (Sept. 10, 1934).—Cardboard, paper, fabrics, etc., are coated with transparent foil (*e.g.*, cellophane), which is affixed by fine lines of adhesive spaced relatively far apart, and shaped as desired.—A. P.-C.

Dyes and Dyeing

Copper in the Manufacture of Colored Papers. V. Cheilly. Cuivre et laiton 8:211-213(1935); C. A. 29:4938.—Uses of copper in paper manufacture for apparatus,

printing and coloring processes are briefly described.—C. J. W.

Dycing Paper with Substantive Acid and Basic Dyes. A. A. MYASNIKOV. Bumazhnaya Prom. 14, no. 1:43-49 (1935); C. A. 29:3833.—The available dyes and the methods of dyeing used in the U. S. S. R. are discussed.—C. J. W.

Designing the "Perfect" Line of Colored Stock. Faber Birren. PAPER TRADE J. 100, No. 20: 53-54 (May 16, 1935).—A discussion describing the uses of color theory and psychology in determining paper colors and anticipating their appeal to the buyer.—A. P.-C.

Sizing

Progress in the Realm of Sizing of Paper in the Years 1929 to 1934. Ernt Hochberger. Papier-Fabr. 33, No. 7: 49-60 (Feb. 17, 1935).—By means of over 100 references to the literature, the author discusses the following topics; theory of rosin sizing, nature of rosin, dispersion of rosin and the properties of the rosin dispersion, interchanging action between the fibers, rosin and the alum; the actions on the paper machine, processes and improvements, surface sizing, colloidal additions and size substitutes such as casein, starch, water glass, waxes and paraffines. The important facts from each of the references are briefly discussed.—J. F. O.

Gillet Size Process. Ecke. Papier-fabr. 33, No. 12: 105-108 (March 24, 1935).—With the Gillet size process a size with from 10 to 80 percent free rosin is possible; there being no advantage in going above 80 percent, in fact, 100 percent free rosin emulsion has no sizing effect. The size is made at atmospheric pressure, and in the first stage a determined quantity of soda ash and sodium bicarbonate is used, this mixture is used to maintain an initial low alkalinity. In the second stage, a volatile alkali such as ammonia is used, which acts as a protective colloid and helps the stability of the size milk. The author cites cases where there has been a saving in size.—J. F. O.

Process for the Manufacture of Sulphite or Sulphate Pulp in Web Form or Sheets. P. B. Burchardt, Forssa Bruk. Swed. pat. 81,449 (June 17, 1931). After the cooking of the pulp and before the drying, rosin milk size and also alum are added, similar to the procedure in the manufacture of paper.—J. F. O.

Paper Manufacturer. Richardson Co., assignees of E. P. Stevenson and H. J. Billings. Brit. pat. 424,098 (Feb. 19, 1934).—Condensation products of the phenols with formaldehyde are formed in presence of an aqueous suspension of rag or chemical pulps by heating at 100°C. with a catalyst (such as ammonia, sodium carbonate, etc.) under constant agitation and at a pressure not higher than atmospheric. When the resin thus produced is in the heat-fusible state, but non-adhesive, the reaction is stopped by addition of cold water. The stock is then lightly beaten and run on to the paper machine, where it can be dried at ordinary drier temperature. Where phenol is used the paper should be vacuum- or air-dried.—A. P.-C.

Rosin Emulsions for Sizing Paper. Antoine C. Gillet. Fr. pat. 44,128 (Oct. 17, 1934).—Addition to Fr. pat. 752,970.—The patent provides a modified apparatus with agitating mechanism. After the saponification described in the main patent, a protective colloid such as casein is added and the mixture is agitated.—A. P.-C.

Drying

The Behavior of the Moist Sheet Upon the Wet Presses. G. Cesconi. Ind. carta 1, no. 12:557-561 (Dec., 1934).—The amount of water contained in the wet sheet leaving the couch press depends upon many factors, such as the furnish, degree of refining, length of wire, speed of operation, basis weight of the paper, the more or less pronounced effect of the suction boxes and the pressure exerted by the couch roll. It has been determined by previous investigators that slow pulps (greaseproof) leave the couch press with an average of 13-14 percent absolute dry and free pulps with an average of 19-24 percent absolute dry. The dewatering effect of the individual wet presses upon various types of paper is illustrated by different tables and graphs, the mean dry content after the last wet press amounting to 26-28 percent absolute dry for greaseproof papers, 35-36 percent for better class writing papers, 30-37 percent for newsprint and 39-42 percent for cardboard made from free pulp. The smoothing effect upon the plastic sheet is studied in relation to its moisture content and directions are given for carrying out the pressing operation at maximum efficiency.—C. J. W.

Steam Measurements in Air Dryers for Pulp. L. J. Hanssen. Papir-J. 22, No. 22:257-262 (Dec. 15, 1934).—The author discusses the steam consumption of pulp drying systems and supplements his remarks with data from two Norwegian installations which were both constructed by the Svenska Flaktfabrikken. Brief reference is made to a new system built by Thunes med. Verksted (Norwegian Patent 58,108) with which the author had no practical experience.—C. J. W.

Steam Inlet or Outlet Device for Drying Cylinders on Paper Machines or Similar Revolving Arrangements. Firma J. M. Voith, Heidenheim, Brenz, Ger. pat. 608,812 (Nov. 27, 1931).—J. F. O.

Dryer Installation Consisting of Groups of Paper Drying Cylinders and Felt Drying Cylinders. Arca Regler A.G., Berlin. Ger. pat. 607,206 (Oct. 26, 1932).—The invention offers the possibility of utilizing the quantity of heat precipitated as condensate in the felt drying cylinder, in heating the entire dryer section, in conjunction with a certain automatic regulator.—J. F. O.

Device for Leading Away the Steam Condensed in Enclosed Containers. Drying Cylinders and Similar Apparatus. M. Molin, Karlskoga. Swed. pat. 82,019 (July 28, 1933).—J. F. O.

Process and Arrangement for the Drying of Paper in a Web Form on a Paper Machine. Wilhelm Wanecek, Linz. Aust. pat. 138,280 (March 15, 1934).—A means is provided for drying the edges of the web of paper to the same moisture content of the remainder of the web.—J. F. O.

Process and Device for the Drying of Wood, Board, Artificial Silk and other Objects Containing Water. Otto Herdey, Dresden. Ger. pat. 604,967 (June 17, 1933).—Air of certain temperature and moisture conditions is introduced into a chamber and reheated at different stages.—J. F. O.

Adhesives

The Influence of Adhesive, Paper and Board in Pasted Articles. Papier-Ztg. 60, No. 25:486-487 (March 27, 1935).—The ability of an adhesive to stick to paper and board depends upon the surface properties and density of these materials. The paste cannot penetrate into well-calendered sheets or into those prepared from slow stock containing a large amount of filler. Very absorptive material, on the other hand, is also unsuitable, because it absorbs water from the adhesive too rapidly and thoroughly. The adhesive must be selected according to the characteristics of the materials on which they are used, i. e., contain larger or smaller additions of water. Hygroscopic substances, such as glycerol, are often added to prevent complete drying of the paste which is inevitably followed by warping of the board.—C. J. W.

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING DECEMBER 21, 1935

CIGARETTE PAPER

H. H. Strauss, Champlain, Havre, 381 cs.

WALL PAPER

S. K. Lonegren, Hjelmaren, Fredriksskans, 30 ctn., 5 bxs.; W. H. S. Lloyd & Co., American Farmer, London, 2 cs.; F. J. Emmerich, Port Nicholson, Liverpool, 7 bls.

PAPER HANGINGS

———, Georgic, London, 32 bls., 6 cs.

NEWSPRINT

Jay Madden Corp., Carplaka, Kotka, 765 rolls; Jay Madden Corp., Scanyork, Kotka, 239 rolls; H. Reeve Angel & Co., Inc., Scanyork, Kotka, 204 rolls; Parsons & Whittemore, Inc., Kungsholm, Gothenburg, 248 rolls; Bank of Montreal, Humberarm, Cornerbrook, 4129 rolls; International Paper Co., Humberarm, Dalhousie, 3936 rolls; Gilman Paper Co., Hjelmaren, Hallstavik, 772 rolls; Brooklyn Daily Times, Hjelmaren, Gothenburg, 290 rolls; N. Y. Evening Journal, Markland, Liverpool, N. S., 138 rolls; N. Y. Tribune, Markland, Liverpool, N. S., 1633 rolls; World-Telegram, Markland, Liverpool, N. S., 595 rolls; Bridgeport Herald, Corp., Markland, Liverpool, N. S., 179 rolls; South Norwalk Sentinel, Markland, Liverpool, N. S., 53 rolls; Brooklyn Daily Eagle, Markland, Liverpool, N. S., 318 rolls; Clinton Paper Corp., Markland, Liverpool, N. S., 929 rolls; N. Y. Evening Journal, Ingerseks, Quebec, 1410 rolls; Jay Madden Corp., Cliffwood, Kotka, 542 rolls; Lunham & Reeve, Inc., Cliffwood, Kotka, 356 rolls.

PRINTING PAPER

Jay Madden Corp., Scanyork, Kotka, 88 rolls, 51 bls.; Steiner Paper Corp., Statendam, Rotterdam, 4 cs.; H. Reeve Angel & Co., Inc., Cliffwood, Kotka, 22 bls.

KRAFT PAPER

Blauvelt Wiley Paper Manfg. Co., Kungsholm, Gothenburg, 19 bls.; Majestic Paper & Twine Co., Inc., Kungsholm, Gothenburg, 20 bls.; Parsons & Whittemore, Inc., Kungsholm, Gothenburg, 18 rolls, 2950 pkgs.

WRAPPING PAPER

Wilkinson Grey Co., Kungsholm, Gothenburg, 36 bls.; National Pulp & Paper Co., Inc., Kungsholm, Gothenburg, 2750 rolls, 128 bls.; A. Johnson & Co., Kungsholm, Gothenburg, 112 bls., 372 rolls; ———, Cliffwood, Kotka, 1320 rolls.

FILTER PAPER

H. Reeve Angel & Co., Inc., American Farmer, London, 5 cs.; J. Manhiemer, Champlain, Havre, 97 cs.; H. Reeve Angel & Co., Inc., Georgic, Liverpool, 14 cs.

DRAWING PAPER

H. Reeve Angel & Co., Inc., American Farmer, London, 5 cs.

SURFACE COATED PAPER

Gevaert Co. of America, Westernland, Antwerp, 10 cs.

MARBLE PAPER

Tamm & Co., Westernland, Antwerp, 2 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., American Importer, Liverpool, 2 cs. (simplex).

COLORED PAPER

R. E. Thibout, E. Francqui, Antwerp, 4 cs.

TISSUE PAPER

Meadows Wye & Co., Port Nicholson, Liverpool, 1 cs.; ———, Kwanto Maru, Kobe, 11 cs.

GREASEPROOF PAPER

Parsons & Whittemore, Inc., Kungsholm, Gothenburg, 18 rolls.

MISCELLANEOUS PAPER

———, Kwanto Maru, Hong Kong, 15 cs.; National Pulp & Paper Co., Inc., Kungsholm, Gothenburg, 619 rolls; Lunham & Reeve, Inc., Kungsholm, Gothenburg, 81 rolls; Blauvelt Wiley Paper Manfg. Co., Kungsholm, Gothenburg, 14 rolls, 8 bls.; The Borregaard Co., Inc., Kungsholm, Gothenburg, 6000 rolls, 762 bls.; Japan Paper Co., Pr. Garfield, Genoa, 14 cs.; Keller Dorian Paper Co., Pr. Garfield, Marseilles, 10 cs.; National City Bank, Champlain, Havre, 9 cs.; Coty Processing Co., Champlain, Havre, 2 cs.; Japan Paper Co., Shohei Maru, Kobe, 35 cs.

RAGS, BAGGING, ETC.

———, Kwanto Maru, Osaka, 245 bls. rags; Castle & Overton, Inc., Cold Harbor, Manchester, 34 bls. rags; Darmstadt Scott & Courtney, Cold Harbor, Manchester, 145 bls. bagging; Royal Manfg. Co., Amer. Importer, Manchester, 58 bls. cotton waste; ———, Amer. Importer, Manchester, 25 bls. cotton waste; Manufacturers Trust Co., Pr. Garfield, Bombay, 550 bls. cotton waste; E. J. Keller Co., Inc., Black Gull, ———, 151 bls. rags; Irving Trust Co., E. Francqui, Antwerp, 68 bls. jute waste; E. J. Keller Co., Inc., E. Francqui, ———, 72 bls. rags; ———, American Farmer, London, 83 bls. paper stock; E. J. Keller Co., Inc., Statendam, ———, 99 bls. bagging; Atlas Waste Manfg. Co., Statendam, Rotterdam, 9 bls. bagging; ———, Ingria, Lisbon, 80 bls. rags; ———, Ingria, Valencia, 772 bls. rags; Bank of N. Y. Trust Co., Ingria, Barcelona, 265 bls. paper stock; E. J. Keller Co., Inc., Ingria, ———, 90 bls. rags; E. J. Keller Co., Inc., Ingria, ———, 156 bls. bagging; Continental Bank Trust Co., Ingria, Barcelona, 5 bls. paper stock; D. M. Hicks, Inc., Collamer, Havre, 10 bls. rags; Darmstadt Scott & Courtney,

Collamer, Dunkirk, 48 bls. bagging; Garvan, Inc., Collamer, Dunkirk, 16 bls. rags; G. W. Millar & Co., Inc., Collamer, Dunkirk, 78 bls. tares; G. W. Millar & Co., Inc., Collamer, Dunkirk, 29 bls. old twines; W. A. Ballinger, Shohei Maru, Kobe, 130 bls. rags; Mitsui & Co., Ltd., Shohei Maru, Nagoya, 75 bls. rags; S. Shapiro & Sons, Cliffwood, Gdynia, 73 bls. rags; E. J. Keller Co., Inc., Nordhavet, ———, 103 bls. paper stock; E. J. Keller Co., Inc., Exermont, ———, 265 bls. paper stock.

OLD ROPE

Irving Trust Co., Black Gull, Rotterdam, 57 coils; E. J. Keller Co., Inc., American Farmer, ———, 76 coils; ———, American Farmer, London, 84 coils; ———, Gitano, Newcastle, 139 coils; E. J. Keller Co., Inc., Ingria, ———, 105 coils; W. Steck & Co., Cliffwood, Copenhagen, 118 coils, 20 bls.

LACTIC ACID

Phillipp Bros., Inc., Black Gull, Rotterdam, 25 carboys.

CASEIN

———, Champlain, Havre, 1529 bags; National City Bank, Southern Cross, Buenos Aires, 417 bags; American & British Chemical Supplies, Southern Cross, Buenos Aires, 417 bags; Swift & Co., Southern Cross, Buenos Aires, 339 bags; ———, Southern Cross, Buenos Aires, 167 bags; ———, Collamer, Havre, 334 bags; ———, Collamer, Dunkirk, 715 bags.

CHINA CLAY

English China Clays Sales Corp., American Importer, Liverpool, 56 bags.

WOOD PULP

Gottesman & Co., Inc., Carplaka, Gdynia, 532 bls. sulphite, 106 tons; M. Sone, Carplaka, Gdynia, 510 bls. sulphite, 101 tons; E. J. Keller Co., Inc., Carplaka, ———, 336 bls. wood pulp, 50 tons; Castle & Overton, Inc., Scanyork, Kotka, 2261 bls. sulphite, 453 tons; Lagerloef Trading Co., Scanyork, Kotka, 2286 bls. ground pulp, 457 tons; Gottesman & Co., Inc., Scanyork, Gdynia, 300 bls. wood pulp, 46 tons; Johaneson Wales & Sparre, Inc., Kungsholm, Gothenburg, 100 bls. sulphate; D. M. Hicks, Inc., Kungsholm, Gothenburg, 210 bls. sulphite; Perkins Goodwin & Co., Kungsholm, Gothenburg, 279 bls. sulphate; E. M. Sergeant Pulp & Chemical Co., Kungsholm, Gothenburg, 150 bls. kraft pulp; Stora Kopparberg Corp., Hjelmaren, Skutskar, 875 bls. wood pulp; Bulkley Dunton & Co., Hjelmaren, ———, 1000 bls. wood pulp, 203 tons; Pagel Horton & Co., Inc., Hjelmaren, Fredriksskans, 750 bls. sulphate, 152 tons; Pagel Horton & Co., Inc., Hjelmaren, Fredriksskans, 125 bls. sulphite, 25 tons; Perkins Goodwin & Co., Hjelmaren, Wifstavarf, 452 bls. sulphate, 76 tons; Castle & Overton, Inc., Cliffwood, Wiborg, 1012 bls. wood pulp, 200 tons; Bulkley Dunton & Co., Deutschland, ———, 200 bls. wood pulp; M. Sone, Fechenheim, Sundsvall, 510 bls. wood pulp; E. J. Keller Co., Inc., Hamburg, ———, 336 bls. wood pulp, 50 tons.

WOOD PULP BOARDS

Jay Madden Corp., Scanyork, Kotka, 33 rolls, 379 bls.; Perkins Goodwin & Co., Kungsholm, Gothenburg, 2 rolls; Fibre Case Novelty Co., Inc., Kungsholm, Gothenburg, 16 bls.; H. Fuchs & Son, Kungsholm, Gothenburg, 21 crates; Wilkinson Grey & Co., Inc., Hjelmaren, Gothenburg, 6 rolls; ———, Cliffwood, Wiborg, 49 bls., 625 rolls; Jay Madden Corp., Cliffwood, Kotka, 208 rolls, 147 bls.

ALBANY IMPORTS

WEEK ENDING DECEMBER 21, 1935

Gottesman & Co., Inc., Carplaka, Stockholm, 7800 bls. sulphite, 1321 tons; J. Anderson & Co., Carplaka, Stockholm, 600 bls. sulphite, 101 tons; Lagerloef Trading Co., Carplaka, Wiborg, 162 bls. sulphate, 27 tons; Lagerloef Trading Co., Carplaka, Wiborg, 1686 bls. sulphite, 282 tons; Castle & Overton, Inc., Carplaka, Wiborg, 3682 bls. wood pulp, 724 tons; Lagerloef Trading Co., Carplaka, Helsingfors, 479 bls. sulphite, 79 tons; ———, Statendam, Rotterdam, 1804 bls. wood pulp; Pagel Horton & Co., Inc., Consul Corfitzon, Honrefors, 2100 bls. sulphite, 350 tons; Pagel Horton & Co., Inc., Consul Corfitzon, Sikea, 9171 bls. sulphite; Price & Pierce, Ltd., Consul Corfitzon, Orviken, 13,425 bls. chemical pulp, 2237 tons; Tradesmans' National Bank Trust Co., Brosund, Norrsundet, 3000 bls. sulphate, 652 tons; Perkins Goodwin & Co., Brosund, Sundsvall, 8550 bls. sulphite, 1425 tons; M. Sone, Brosund, Sundsvall, 1050 bls. sulphite, 175 tons; ———, Brosund, Sundsvall, 116 bdls. wall boards; Bulkley Dunton & Co., Brosund, ———, 9000 bls. sulphite, 1500 tons; Gottesman & Co., Inc., Sangstad, Sweden, 1000 bls. wood pulp.

PORTLAND IMPORTS

WEEK ENDING DECEMBER 21, 1935

Gottesman & Co., Inc., Malaren, Sweden, 9300 bls. wood pulp.

BOSTON IMPORTS

WEEK ENDING DECEMBER 21, 1935

E. Butterworth & Co., Inc., McKeesport, Glasgow, 126 bls. paper stock; ———, McKeesport, Glasgow, 52 bls. rags; Castle & Overton, Inc., Black Gull, Rotterdam, 150 bls. wood pulp, 30 tons; ———, Black Gull, Rotterdam, 88 bls. rags; G. F. Malcolm, Inc., Port Nicholson, Liverpool, 6 cs. tissue paper; ———, Collamer, Havre, 50 bls. cotton waste; ———, Collamer, Havre, 100 bls. bagging; D. M. Hicks, Inc., Collamer, Havre, 62 bls. new cuttings; G. M. Graves Co., Inc., Collamer, Havre, 199 bls. rags; ———, Collamer, Dunkirk, 55 bls. rags; Royal Manfg. Co., Collamer, Dunkirk, 40 bls. cotton waste; M. Sone, Idarwald, Hamburg, 319 bls. wood pulp; E. J. Keller Co., Inc., Black Eagle, ———, 92 bls. bagging; E. J. Keller Co., Inc., Frankfurt, ———, 336 bls. wood pulp.

NEW LONDON IMPORTS

WEEK ENDING DECEMBER 21, 1935

Gottesman & Co., Inc., Sangstad, Sweden, 1500 bls. wood pulp.

PHILADELPHIA IMPORTS

WEEK ENDING DECEMBER 21, 1935

J. W. Hampton Jr. & Co., Carplaka, Kotka, 385 rolls newsprint; M. Sone, Scanyork, Helsingfors, 208 bls. wood pulp, 41 tons; Tampa Paper Co., Scanyork, Kotka, 40 bls. newsprint; Jay Madden Corp., Scanyork, Kotka, 362 bls. wood pulp boards; Lagerloef Trading Co., Scanyork, Kotka, 730 rolls wood pulp boards; Lagerloef Trading Co., Scanyork, Kotka, 762 bls. ground pulp, 152 tons; J. W. Hampton Jr. & Co., Scanyork, Kotka, 356 rolls newsprint; Gottesman & Co., Inc., Scanyork, Gdynia, 972 bls. wood pulp, 150 tons; Bank of The Manhatton Co., Scanyork, Gdynia, 1050 bls. wood pulp, 105 tons; A. W. Fenton, Inc., Cold Harbor, Manchester, 15 bls. bagging; Philadelphia Inquirer Co., Hjelmaren, Hallstavik, 536 rolls newsprint; Stora Kopparberg Corp., Hjelmaren, Skutskar, 1830 bls. wood pulp, 570 tons; Gottesman & Co., Inc., Hjelmaren, Fredriksskans, 2500 bls. wood pulp, 266 tons; Gottesman & Co., Inc., Hjelmaren, Wifstavarf, 3000 bls. sulphate, 507 tons; Gottesman & Co., Inc., Hjelmaren, Gothenburg, 1544 bls. chemical pulp, 270 tons; Perkins Goodwin & Co., Hjelmaren, Gothenburg, 1295 bls. sulphate, 258 tons; Johaneson Wales & Sparre, Inc., Hjelmaren, Gothenburg, 125 bls. sulphate, 25 tons; The Borre-

(Continued on page 46)

1864 1935

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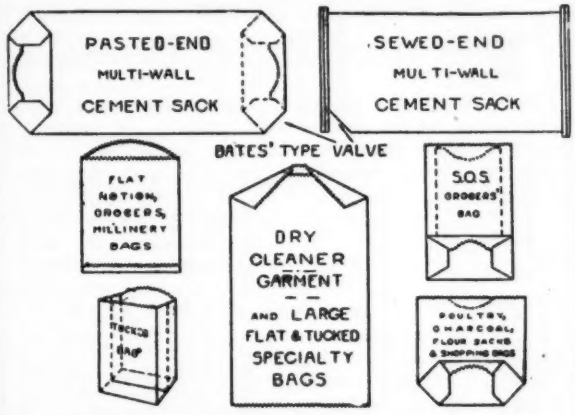
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WOOD PULP AGENTS

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New York Market Review

Office of the PAPER TRADE JOURNAL,
Tuesday, December 24, 1935.

Conditions in the local paper market are considered satisfactory. Demand for the various grades of paper during the closing months of the year has been heavy and has surpassed the record of the corresponding period of 1934. Sales forces of the leading paper organizations are optimistic regarding the future.

The position of the newsprint paper market has improved. Production has been maintained in greater volume to meet the increased consumption and there are no undue accumulations at the mills. The price situation is slightly better, although regarded still too low when all factors are taken into account.

Demand for the various grades of fine paper has been well sustained and quotations on book, bond and ledger papers are firm. Tissues are still moving in good volume. The coarse paper market is exhibiting a strong undertone and the volume of wrapping paper sales during the past few months has expanded materially.

Mechanical Pulp

The ground wood pulp market is displaying signs of betterment. Demand is more persistent. Manufacturing operations in North America and abroad are being maintained in sufficient volume to take care of current requirements. Stocks at the pulp mills are not excessive. Prices are steady to firm.

Chemical Pulp

Business in the chemical pulp market is fairly buoyant. Demand for both domestic and imported grades is well sustained. There are a number of inquiries around for future accounts. Kraft pulp is very firm and orders are being booked for 1937 delivery. Bleached sulphite pulp is also displaying strength.

Old Rope and Bagging

The old rope market is more active than for some time past. Demand for domestic and imported old manila rope is better. Mixed strings are moving freely. Prices are slightly firmer. The bagging market is steady. Higher prices have been paid for scrap and gunny bagging, in some instances.

Rags

Steadiness prevails in the domestic rag market. Demand for new cotton rags is excellent for the time of year, especially for No. 1 white shirt cuttings, blue overalls and unbleached muslins. Roofing grades are moving into consumption in good volume for the season. Prices are holding to schedule, in most instances.

Waste Paper

Board mill demand for the lower grades of paper stock is only moderately active, but should expand materially after the holidays and the inventory period. The higher grades of waste paper are stronger, with offerings in some cases, rather limited. The outlook for book stock is considered brighter, in some quarters.

Twine

The local twine market has been very active during the last few months and the usual holiday lull has not been so pronounced. Prices continue steady to firm and advances have again been announced on both hard and soft fiber twines. The future outlook for the twine market is considered promising.

IMPORTS OF PAPER AND PAPER STOCK

(Continued from page 44)

gaard Co., Inc., Hjelmaren, Gothenburg, 93 bls., 978 rolls paper; Chase National Bank, Hjelmaren, Gothenburg, 65 bls., 554 rolls wrapping paper; National Pulp & Paper Co., Inc., Hjelmaren, Gothenburg, 108 rolls paper; E. Mayer, Black Gull, Rotterdam, 88 bls. rags; E. J. Keller Co., Inc., Black Gull, ———, 387 bls. rags; ———, Ingria, Barcelona, 17 bls. threads; ———, Ingria, Barcelona, 60 bls. rags; Congoleum-Nairn Co., Ingria, Lisbon, 545 bls. rags; Lagerloef Trading Co., Cliffwood, Kotka, 36 rolls pulp boards; J. W. Hampton Jr. & Co., Cliffwood, Kotka, 478 rolls newsprint; Gottesman & Co., Inc., Idarwald Czecho-Slovakia, 380 bls. wood pulp; M. Sone, Idarwald, Hamburg, 469 bls. wood pulp; E. J. Keller Co., Inc., Breedyk, ———, 237 bls. rags.

BALTIMORE IMPORTS

WEEK ENDING DECEMBER 21, 1935

Guaranty Trust Co., Carplaka, Gdynia, 786 bls. sulphite, 58 tons; ———, Carplaka, Gdynia, 693 bls. wood pulp, 107 tons; Johaneson Wales & Sparre, Inc., Carplaka, Gdynia, 1200 bls. wood pulp, 120 tons; W. H. Masson, Cold Harbor, Liverpool, 131 bls. waste paper; Washington Post, Markland, Liverpool, N. S., 2144 rolls newsprint; M. Sone, Etna, Sundsvall, 2500 bls. wood pulp; Bulkley Dunton & Co., Fechenheim, ———, 3477 bls. wood pulp; Bulkley Dunton & Co., Black Hawk, ———, 480 bls. wood pulp; Gottesman & Co., Inc., Fechenheim, Sweden, 5846 bls. wood pulp.

NORFOLK IMPORTS

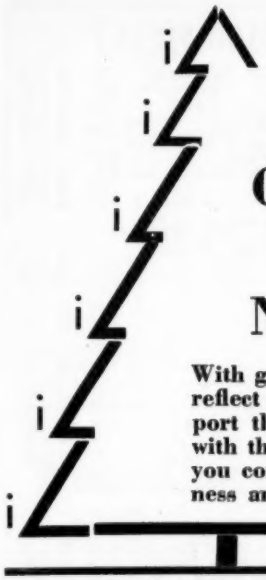
WEEK ENDING DECEMBER 21, 1935

E. J. Keller Co., Inc., Cold Harbor, ———, 30 bls. bagging; Irving Trust Co., Cold Harbor, Manchester, 44 bls. bagging; ———, Cold Harbor, Liverpool, 66 bls. bagging; Gottesman & Co., Inc., Cliffwood, Stockholm, 150 bls. sulphate, 25 tons; Lagerloef Trading Co., Cliffwood, Helsingfors, 520 bls. mechanical pulp, 104 tons; Lagerloef Trading Co., Cliffwood, Wiborg, 5135 bls. sulphite, 1027 tons; Lagerloef Trading Co., Cliffwood, Wiborg, 201 bls. mechanical pulp, 30 tons; Lagerloef Trading Co., Cliffwood, Kotka, 5280 bls. sulphite, 924 tons; Lagerloef Trading Co., Cliffwood, Kotka, 1000 bls. sulphate, 200 tons; Jay Madden Corp., Cliffwood, Kotka, 120 bls. pulp boards.

NEW ORLEANS IMPORTS

WEEK ENDING DECEMBER 21, 1935

Gottesman & Co., Inc., Vasaholm, Sweden, 1200 bls. wood pulp; Gottesman & Co., Inc., Vasaholm, Finland, 1050 bls. wood pulp; Gottesman & Co., Inc., Sandhamn, Sweden, 3300 bls. wood pulp.



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and a
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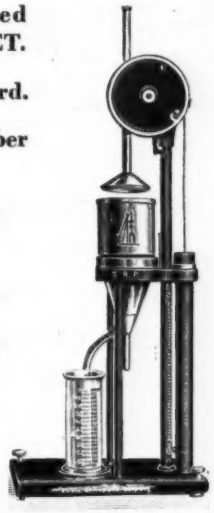

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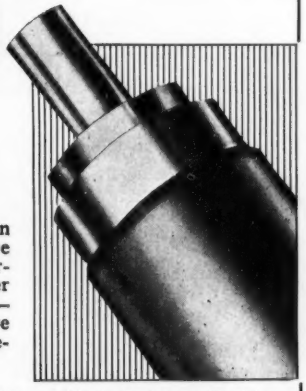

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Perfection Rolls Are Perfect in Every Detail

PAPER MANUFACTURERS CO., Inc.
5th and Willow Streets Philadelphia, Pa.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Tuesday, December 24, 1934.

BLANC FIXE—Affected by the Yuletide holiday lull the blanc fixe market is only moderately active. The pulp is still quoted at $42.50 to $45 per ton, in bulk; while the powder is selling at 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER—The position of the bleaching powder market is practically unchanged. Shipments against contract are moving regularly. Prices remain steady. Bleaching powder is quoted at $2 to $2.25 per 100 pounds, in drums, at works.

CASEIN—The casein market is firm. Domestic standard ground is quoted at 15 and finely ground at 15½; Argentine standard ground at 14¾ and finely ground at 15; French standard ground at 14½ and finely ground at 15 cents per pound, in bags, car lot quantities.

CAUSTIC SODA—Demand for caustic soda is fairly persistent. The contract movement is normal for the time of year. Prices are firm. Solid caustic soda is quoted at $2.55 to $2.60; while the flake and ground are selling at $2.95 to $3 per 100 pounds, at works.

CHINA CLAY—The China clay market is exhibiting a strong undertone. Contract shipments are moving in good volume. Imported China clay is quoted at $13.50 to $21 per ton, ship side; while domestic paper making clay is selling at $6.50 to $12 per ton, at mine.

CHLORINE—Steadiness prevails in the chlorine market. Contract orders for 1936 are being booked in good volume. Prices are holding to schedule. Chlorine is quoted at $2.15 to $2.55 per 100 pounds, in tanks, or multi-unit cars, at works.

ROSIN—The rosin market is soft. Paper making gum rosin is quoted at $4.25 and wood rosin at $4.40 per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent rosin size is selling at $2.52½ per 100 pounds, in tank cars, at works.

SALT CAKE—Paper mill demand for salt cake is brisk. The contract movement is well up to average. Prices are steady. Salt cake is quoted at $12 to $13; chrome salt cake at $11 to $12 per ton, at works. Imported salt cake is selling at $12 to $13 per ton, ship side.

SODA ASH—The soda ash market is steady to firm. Supplies are moving into consumption in good volume. Prices remain unchanged. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.05; in bags, $1.20; and in barrels, $1.50.

STARCH—Conditions in the starch market are fairly satisfactory. The contract movement is seasonal. Prices remain unchanged. Special paper making starch is quoted at $3.14 per 100 pounds, in bags; and at $3.41 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA—The sulphate of alumina market is displaying strength. Shipments against contract are moving freely. Prices are firm. Commercial grades are quoted at $1.35 to $1.50; and iron free at $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR—The sulphur market continues steady. Sulphur is quoted at $18 per long ton on orders of 1,000 tons, or over, on yearly contracts and at $20 per ton on any smaller quantity over that period. On spot and near by car loads, the quotation is $21 per ton.

TALC—Business in the talc market is fairly active for the season. Prices are holding to previously quoted levels. Domestic talc is quoted at $16 to $18 per ton, at eastern mines; while imported talc is selling at $23 to $30 per ton, on dock.

Market Quotations

Paper

Rag Content Bond & Ledgers— Delivered Zone 1	Bonds	Ledgers
100% Rag Ext. No. 1	.36	.37
100% Rag	.28	.29
75% Rag	.21	.22
65% Rag	.18	.19
50% Rag	.15	.16
25% Rag	.12½	.13½

Sulphite Bond & Ledgers— Delivered Zone 1	Bonds	Ledgers
No. 1 Sulphite	7.75	8.75
No. 2 Sulphite	6.75	7.75
No. 3 Sulphite	6.00	7.00
No. 4 Sulphite	5.50	6.50

Book, Cased—		
S. & S. C.	5.35 @	5.75
S. & S. C. Litho.	5.60 @	6.00
M. F.	5.10 @	5.50
Coated and Enamel	5.90 @	6.55
Coated Litho	5.90 @	6.55
Tissues—Per Ream—		
White No. 1	.77½ @	.82½
White No. 2	.60 @	—
Anti-Tarnish M. G.	.67½ @	—
Colored	.80 @	—
Kraft	.67½ @	—
Manila	.60 @	—
Manila—		
No. 1 Jute	9.00 @	9.25
No. 2 Jute	7.75 @	8.50
No. 1 Wood	4.00 @	5.25
No. 2 Wood	3.50 @	4.00
Butchers	4.00 @	4.50
Fibre Papers—		
No. 1 Fibre	4.25 @	5.50
No. 2 Fibre	4.00 @	4.75
Common Bogus	1.50 @	3.00
Screenings	2.50 @	3.50
Glassine—		
Bleached	.11 @	—
Unbleached	.09 @	—

(The following Quotations are Delivered New York)

News, per ton—		
Roll, contract	41.00 @	—
Sheets	46.00 @	—
Kraft—		
No. 1 Northern	4.12½ @	4.75
Standard	4.00 @	—
Southern	3.87½ @	—
Boards—per ton—		
News	35.00 @	—
Chip	32.50 @	—
Sgl. Mla. Ll. Chip	45.00 @	47.50
Jute Lined Chip	42.50 @	45.00
Kraft Liners	57.50 @	60.00
White Patent Coated	55.00 @	57.50
Binders Boards	67.00 @	75.00

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—		
Moist	21.00 @	22.00
Dry	21.00 @	22.00
(F. o. b. Mill)		
No. 1 Domestic and Canadian	18.00 @	24.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—		
Division 1	2.60 @	2.90
Division 2	2.55 @	—*
Division 3	2.50 @	—*
Prime Qualities—		
Class 1. All Prime Easy Bleaching	2.05 @	—*
Other Than Easy Bleaching—		
Class 2. Higher than Standard	2.00 @	—*
Class 3, Standard	1.95 @	—*
Class 4, Lower than Standard	1.90 @	—*
(On Dock, Atlantic Ports)		
Kraft No. 1	1.75 @	1.85
Kraft No. 2	1.60 @	1.70
(F. o. b. Pulp Mill)		
Kraft Domestic	1.75 @	1.80
(Delivered)		
Soda Bleached	2.50 @	—

* Add 60 Cents per short ton, dock charges, for Albany; $2.00 for Lake Ports East and $3.00 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—		
New White, No. 1	6.75 @	7.00
Silesias No. 1	4.50 @	4.75
New Unbleached	7.00 @	7.25
New Soft Blacks	3.00 @	3.25
Blue Overall	5.25 @	5.50
Fancy	2.50 @	2.75
Washables	1.90 @	2.15
Mixed Khaki Cuttings	3.25 @	3.50
O. D. Khaki Cuttings	4.00 @	4.25
Men's Corduroy	1.85 @	2.00
New Mixed Blacks	2.50 @	2.75

Old Rags

White, No. 1—		
Repacked	3.00 @	3.50
Miscellaneous	2.75 @	3.25
White, No. 2—		
Repacked	1.75 @	2.25
Miscellaneous	1.50 @	1.75
Thirds and Blues—		
Repacked	1.75 @	1.85
Miscellaneous	1.45 @	1.55
Roofing Rags—		
No. 1	1.55 @	1.60
No. 2	1.35 @	1.40
No. 3 (bagging)	1.00 @	1.05
No. 4	.95 @	1.00
No. 5A	.90 @	1.00

Foreign Rags

New Rags

New Dark Cuttings	2.00 @	2.25
New Mixed Cuttings	1.80 @	1.90
New Light Silesias	3.75 @	4.00
Light Flannelettes	4.00 @	4.25
New White Cuttings	6.50 @	6.75
New Light Oxfords	3.25 @	3.50
New Light Prints	2.75 @	3.00

Old Rags

No. 1 White Linens	7.50 @	8.00
No. 2 White Linens	6.50 @	7.00
No. 3 White Linens	4.50 @	5.00
No. 4 White Linens	2.25 @	2.50
No. 1 White Cotton	4.25 @	4.75
No. 2 White Cotton	3.25 @	3.75
No. 3 White Cotton	2.50 @	2.75
No. 4 White Cotton	1.90 @	2.15
Extra Light Prints	2.00 @	2.25
Ord. Light Prints	1.75 @	1.85
Med. Light Prints	1.55 @	1.65
Dutch Blue Cottons	2.00 @	2.25
French Blue Linens	2.30 @	2.40
German Blue Linens	2.15 @	2.25
German Blue Cottons	1.70 @	1.80
Checks and Blues	1.70 @	1.80
Linsey Garments	1.95 @	2.05
Dark Cottons	1.50 @	1.60
Old Shopperies	1.00 @	1.05
New Shopperies	1.25 @	1.35
French Blues	2.00 @	2.25

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—		
Foreign	2.00 @	2.10
Domestic	1.90 @	2.00
Wool Tares, light	1.70 @	1.75
Wool Tares, heavy	2.15 @	2.30
Bright Bagging	1.75 @	1.80
Manila Rope—		
Foreign	2.10 @	2.15
Domestic	2.00 @	2.10
Mixed Strings	.85 @	1.00
New Burlap Cut	2.00 @	2.25
Hessian Jute Threads—		
Foreign	2.60 @	2.75
Domestic	2.80 @	3.00

Old Waste Papers

(F. o. b. New York)

Shavings—		
White Envelope Cuttings	2.45 @	2.55
Ordinary Hard White No. 1	2.10 @	2.15
Hard White No. 2	1.90 @	2.00
Soft White No. 1	1.80 @	1.90
Flat Stock—		
Stitchless	.65 @	.75
Over issue Mag	.65 @	.75
Solid Flat Book	.55 @	.60
Crumpled No. 1	.35 @	.40
Solid Book Ledger	1.50 @	1.65
Ledger Stock	.85 @	.90
New B. B. Chips	.30 @	.35
Manilas—		
New Env. Cut	1.70 @	1.80
New Cuttings	1.35 @	1.45
Bogus Wrapper	.40 @	.50
Old Kraft Machine— Compressed bales	1.10 @	1.20
News—		
No. 1 White News	1.45 @	1.50
Strictly Overissue	.50 @	.55
Strictly Folded	.32½ @	.35
No. 1 Mixed Paper	.25 @	.27½

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Svanö, Sweden

Twines

(F. o. b. Mill)

(Soft Fibre)

Coarse Polished—

India	.13¼	@	.15¼
Belg. White Hemp	.14½	@	.17¾
India Compress	.13¾	@	.14½

Fine Polished—

Fine India	.21½	@	.23½
Special	.19½	@	.21½

Unpolished—

Box	.12	@	.12½
Paper Makers	.09	@	.13½
Tube Rope	.10	@	.15½
Wall Paper	.11	@	.14½
Wrapping	.15½	@	.21
Special	.15	@	.15½
Soft Fiber Rope	.12½	@	.12¾

(Hard Fibre)

Bond	.12	@	.20½
Anchor	.11½	@	.13
Manila	.21	@	.28

CHICAGO

Paper

(F. o. b. Mill)

Rag Bond	.12	@	.50
Water Marked Sulphite Bond	.06¾	@	.11
Sulphite Bond	.05½	@	.11
Superfine Writing	.18	@	.24
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07	@	.12
Coated Label	.07	@	.08½
No. 1 Manila	.04½	@	.05¾
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.03¾	@	.03¾
No. 1 Kraft	4.75	@	5.00
Southern Kraft	3.88	@	4.25
No. 2 Kraft	3.88	@	4.25
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue	.05¾	@	.07
White Tissue	.07	@	.09

(Delivered Central Territory)

News, per ton—			
Rolls, contract	41.00	@	—
Sheets, open	46.00	@	48.50
Boards, per ton—			
Plain Chip	46.50	@	—
Solid News	50.00	@	—
Manila Lined Chip	55.00	@	—
Patent Coated	65.00	@	—
Container Lined—			
85 Test, per 1000 sq. ft.			1.70
100 Test, per 1000 sq. ft.			1.85

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings	1.70	@	2.00
No. 1 Hard White	1.40	@	1.65
No. 1 Soft White	1.25	@	1.50
Ledger & Writings	.70	@	.80
Solid Books	.60	@	.70
Blanks	1.00	@	1.05
Krafts	.80	@	.90
New Kraft Cuts	1.20	@	1.30
Manila Env. Cuts	1.25	@	1.30
Ex. No. 1 Manila	.90	@	1.00
Print Manila	.40	@	.50
Overissue News	.40	@	.45
Old Newspapers—			
No. 1	.30	@	.35
No. 1 Mixed Paper	.25	@	.30
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper

Rag Content Bond & Ledgers—
Delivered Zone 1

	Bonds	Ledgers
100% Rag Ext. No. 1	.36	.37
100% Rag	.28	.29
75% Rag	.21	.22
65% Rag	.18	.19
50% Rag	.15	.16
25% Rag	.12½	.13½

Sulphite Bond & Ledgers—
Delivered Zone 1

	Bonds	Ledgers
No. 1 Sulphite	7.75	8.75
No. 2 Sulphite	6.75	7.75
No. 3 Sulphite	6.00	7.00
No. 4 Sulphite	5.50	6.50

F.o.b. Mill

Book, M. F.	.05¼	@	.06¼
Book, S. S. & C.	.05½	@	.07½
Book, Coated	.06½	@	.09
Coated Lithograph	.06¾	@	.08½
No. 1 Jute Manila	6.25	@	—
Manila Sul., No. 1	5.25	@	—
Manila No. 2	3.75	@	—
No. 1 Kraft	5.00	@	—
Southern Kraft	4.75	@	—
News Print Rolls	40.00	@	—
Straw Board	40.00	@	45.00
News Board	40.00	@	—
Chip Board	37.50	@	—
Wood Pulp Board	70.00	@	85.00
Binder Boards—			
No. 1, per ton	75.00	@	80.00
No. 2, per ton	70.00	@	75.00
Carload lots	65.00	@	70.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.06½	@	.07
New White, No. 2	.04½	@	.05
Light Silesias	.04	@	.05
Silesias, No. 1	.04	@	.04½
Black Silesias, soft	.03	@	—
New Unbleached	.06½	@	—
Washable, No. 1	.02	@	.02½
Blue Overall	.05	@	.05½
Cottons—According to grades—			
Washable, No. 2	.02¼	@	.04½
New Blue	.02	@	—
Fancy	.01½	@	.02
New Black Soft	.04¼	@	—
New Light Seconds	.04	@	—
New Dark Seconds	1.10	@	—
Khaki Cuttings—			
No. 1 O. D.	.04	@	—
No. 2 Mixed	.03	@	.04
Corduroy	.01¼	@	.02
New Canvas	.03½	@	.04½
New Black Mixed	.02¼	@	.02½

Domestic Rags (Old)

White No. 1—			
Repacked	3.50	@	4.00
Miscellaneous	2.50	@	3.25
Thirds and Blues—			
Miscellaneous	1.75	@	2.00
Repacked	2.50	@	2.75
Black Stockings (Export)	4.50	@	5.00
Roofing Stock—			
Foreign No. 1	1.10	@	1.20
Repacked	1.30	@	1.50

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.75	@	—
Domestic	2.00	@	—
Manila Rope	2.50	@	—
Sisal Rope	.75	@	1.00
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	1.75	@	1.80
No. 2	.80	@	.90
Wool Tares, heavy	3.00	@	3.25
Mixed Strings	1.00	@	1.10
No. 1 New Light Burlap	2.25	@	2.50
New Burlap Cuttings	2.00	@	2.25

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.25	@	2.30
No. 2 Hard White	1.90	@	2.00
No. 1 Soft White	1.80	@	1.85
No. 2 Soft White	1.25	@	1.30
No. 1 Mixed	—	@	.75
Solid Ledger Stock	1.50	@	1.60
Writing Paper	1.00	@	1.10
No. 1 Books, heavy	.55	@	.60
No. 1 New Manila	1.50	@	—
Print Manila	.50	@	.60
Container Manila	—	@	.50
Old Kraft	1.60	@	—
No. 1 Mixed Paper	—	@	.30
Straw Board Chip	.40	@	—
Binders Board Chip	.40	@	—
Corrugated Board	.55	@	—
Overissue News	.60	@	—
Old Newspapers	.40	@	—

BOSTON

Paper

Rag Content Bond & Ledgers—
Delivered one 1

	Bonds	Ledgers
100% Rag Ext. No. 1	.36	.37
100% Rag	.28	.29
75% Rag	.21	.22
65% Rag	.18	.19
50% Rag	.15	.16
25% Rag	.12½	.13½

Sulphite Bond & Ledgers—
Delivered Zone 1

	Bonds	Ledgers
No. 1 Sulphite	7.75	8.75
No. 2 Sulphite	6.75	7.75
No. 3 Sulphite	6.00	7.00
No. 4 Sulphite	5.50	6.50

F.o.b. Mill

Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¼	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04¾	@	.05
No. 2 Kraft	.04½	@	.04¾

(F. o. b. Boston)

Southern Kraft	.03¾	@	.04½

(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots)

(Delivered New England points)

News Print Rolls	39.50	@	—
Straw Board, rolls.009	—	@	35.00
Filled News Board	40.00	@	45.00
Chip Board	37.50	@	40.00
Single Manila Lined Chip	47.50	@	52.50
Single White, Patent Coated News Board (Bender)	55.00	@	65.00
Wood Pulp Board	70.00	@	75.00
Binder Boards (Standard Grade)	67.00	@	75.00

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.00	@	2.20
No. 1 Soft White	1.75	@	1.90
No. 2 Mixed	.75	@	.80
Solid Ledger Books	1.40	@	1.50
Overissue Ledger Stock	1.15	@	1.30
Mixed Ledgers	.85	@	.90
No. 1 Books, heavy	.55	@	.65
No. 1 Books, light	.50	@	.60
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.50	@	1.60
No. 1 Old Manila	.60	@	.65
White Blank News	1.25	@	1.30
No. 1 Kraft	1.05	@	—
Mixed Papers	.22½	@	.25
Print Manila	.50	@	.60
Container Manilas	.27½	@	—
Old Newspapers	.25	@	.27½
Overissue News	—	@	.35
Box Board Chips	—	@	.25
Corrugated Boxes	.35	@	.37½
Kraft corrugated boxes	.85	@	—
Screening Wrappers	.40	@	.45

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	2.00	@	2.25
Domestic	2.10	@	2.25
Transmission Rope	.90	@	1.00
Jute Rope	2.00	@	2.25
Jute Carpet Threads	1.00	@	1.10
Gunny No. 1—			
Foreign	2.00	@	2.25
Domestic	1.80	@	2.00
Bleachery Burlap	4.00	@	4.50
Scrap Burlap—			
Foreign	1.95	@	2.00
Domestic	1.60	@	1.75
Scrap Sisal	1.85	@	1.95
Scrap Sisal for Shredding	2.00	@	2.10
Wool Tares, heavy	2.00	@	2.10
New Burlap Cuttings	2.25	@	2.35
Australian Wool Pouches	3.00	@	3.25
Heavy Baling Bagging	2.50	@	2.75
Paper Mill Bagging	1.20	@	1.35
Bagging No. 2	.90	@	.95

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.01¾	@	.02
New White No. 1	.06¾	@	.07
New White No. 2	.04	@	.04¼
Silesias No. 1	.04½	@	—
New Black Silesias	.02½	@	.03
Soft Unbleached	.06¾	@	.07
Blue Cheviot	5.25	@	5.50
Fancy	.0225	@	.023
Washable	.0165	@	.0170
Cottons—According to grades—			
Blue Overalls	5.25	@	5.50
New Black, soft	.04	@	.04¾
Khaki Cuttings	.04	@	.04½
O. D. Khaki	.04	@	.04¼
Corduroy	.01¾	@	.02
New Canvas	—	@	.05
B.V.D. Cuttings	—	@	.06¼

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues	1.50	@	2.00
Thirds and Blues—			
Repacked	1.37½	@	1.75
Miscellaneous	1.25	@	1.62½
Black Stockings	2.50	@	3.00
Roofing Stock—			
No. 1	1.35	@	1.40
No. 2	1.15	@	1.20
No. 3	.95	@	1.00

Foreign Rags

(F. o. b. Boston)

Dark Cottons	1.60	@	1.70
New White Shirt Cuttings	6.50	@	6.75
Dutch Blues	2.25	@	2.50
New Checks & Blues	2.50	@	3.00
Old Fustians	1.90	@	—
Old Linsey Garments	2.10	@	—
New Silesias	4.50	@	4.75

TORONTO

Paper

(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.11	@	—
No. 2 Sulphite	.08½	@	—
No. 1 Colored	.12	@	—
No. 2 Colored	.09	@	—
Ledgers (sulphite)—			
Ledgers, No. 1	.34½	@	—
Ledgers, No. 2	.25½	@	—
Writing	.09	@	.09½
Book—			
No. 1 M. F. (Carloads)	6.50	@	—
No. 2 M. F. (Carloads)	6.00	@	—
No. 3 M. F. (Carloads)	6.00	@	—
No. 1 S. C. (Carloads)	7.00	@	—
No. 2 S. C. (Carloads)	6.50	@	—
No. 3 S. C. (Carloads)	6.50	@	—
No. 1 Coated and Litho	12.00	@	—
No. 2 Coated and Litho	10.50	@	—
No. 3 Coated and Litho	9.50	@	—
Coated tinted	13.00	@	—
Wrapping—delivered—			
Rag Brown	4.75	@	—
White Wrap	3.50	@	—
"B" Manila	5.25	@	—
No. 1 Manila	5.40	@	—
Fiber	5.40	@	—
Kraft, M. F.	5.90	@	—
Kraft, No. 2	5.40	@	—

(F. o. b. Cars Toronto)

News, per ton—			
Rolls (contract)	39.50	@	—
Sheets	44.50	@	—

Pulp

Ground wood	27.00	@	—
Unbleached Sulphite	42.00	@	—
Book (Class 1)	58.00	@	—
Writing (Class 2)	59.00	@	—
Select (Class 3)	60.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.00	@	2.25
Soft White	1.60	@	1.90
White Blk. News	1.25	@	1.40
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	@	1.00
Light and Crumpled Book Stock	.80	@	.90
Ledgers and Writings	1.00	@	1.05
Manilas—			
New Manila Cut	1.25	@	1.40
Printed Manilas	.50	@	.60
Kraft	1.00	@	1.60
News and Scrap—			
Strictly Overissue	.55	@	—
Strictly Folded	.50	@	—
No. 1 Mixed Paper	.40	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.06¼	@	.06½
Fancy Shirt Cuttings	.02¼	@	.02½

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All kinds and styles of Felts for all kinds and styles of Papers.

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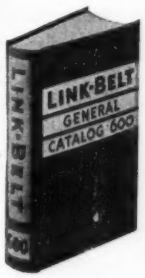

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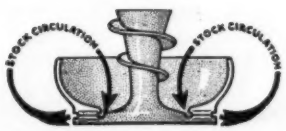

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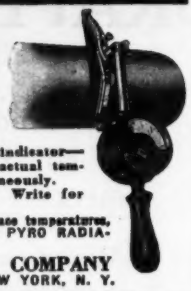

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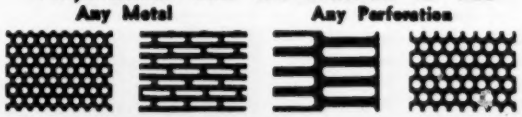

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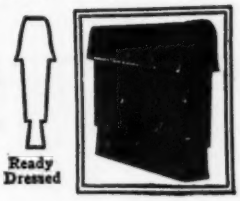

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WANTED—For a sales engineering position, a man with technical and paper mill experience. State age, training, and experience. All replies will be kept strictly confidential. Address Box 35-614, care Paper Trade Journal. J-2

WANTED—MACHINE TENDER familiar with test liners and light weight board for small mill. Steady work and good pay for right man. Address Box 35-597, care Paper Trade Journal. D-26

WANTED — SUPERINTENDENT familiar with manufacture of light weight boards and specialties. Must be willing to work and able to handle repairs. Address Box 35-598, care Paper Trade Journal. D-26

WANTED—Cylinder machine tender on Groundwood and Sulphite boards. Seventy-three cents per hour, eight hour mill. Address Box 35-600, care Paper Trade Journal. D-26

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ELECTRICAL—University graduate. Mill construction and maintenance experience. Excellent references from present employer. Address Box 35-588, care Paper Trade Journal. J-2

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GRADUATE CHEMICAL ENGINEER desires connection with pulp or paper mill technical staff or as laborer to learn business. Salary secondary consideration. Address Box 35-602, care Paper Trade Journal. J-2

SALESMAN with twenty years' experience in paper industry having acquaintance with buyers in sixteen states from Penna. to Texas desires Permanent connection. Qualified for other lines. Can locate anywhere. Address Box 35-603, care Paper Trade Journal. J-9

WANTED

WANTED—A 136" Fourdrinier, or will consider odd parts suitable for this size, such as suction boxes, wire carrying rolls, side rails, shake and couch rolls. State particulars in full. Address Box 35-535, care Paper Trade Journal. J-2

WANTED—Calender rolls, 132" minimum face, 24" diameter or smaller. Can consider larger face rolls. Address Box 35-536, care Paper Trade Journal. J-2

WANTED—Dryer felt rolls, 136" face, wet felt rolls, 140" face. State condition, location, whether with or without bearings, and price. Address Box 35-537, care Paper Trade Journal. J-2

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WANTED—Paper machine suitable for manufacturing wrapping paper, trim nearest to 156" desired, and approximately 40 dryers. Let us have your offering nearest to this specification. Going paper manufacturer will pay cash. Address Box 35-539, care Paper Trade Journal. J-2

WANTED—WHAT HAVE YOU? Paper manufacturer of long standing who is rebuilding machines and increasing production will consider any equipment suitable for paper mill use. A-1 credit, or will pay cash. Real opportunity for idle mills, or manufacturers who have odd equipment, to dispose of same at better price than usually can be obtained. Address Box 35-538, care Paper Trade Journal. J-2

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1—21 Claflin.
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FOR SALE—72 inch Cameron Slitter and Rewinder suitable for slitting and rewinding rolls of not narrower than two to two and one-half inches. E. W. Twitchell, Inc., 3rd & Somerset Sts., Philadelphia. F-13

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Norton Co.

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Downingtown Mfg. Co.
Hauser Stander Tank Co.
Improved Paper Mchy. Corp.
Moore & White Co.
Valley Iron Works Co.

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Improved Paper Mchy. Corp.

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Thwing Instrument Co.

AIR DRYING MACHINERY
Waldron, John, Corp.

AIR PREHEATING UNITS
Ross Engineering Corp., J. O.

ALLOYS
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Paper Makers Chemical Corp.
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AUTOMATIC WATER FEEDER
Control Equipment Corp.
Merritt Engineering & Sales Corp., The

BACKING WIRES
Appleton Wire Works
International Wire Works

BAG MACHINES
Potdevin Machine Co.
Smith & Winchester Mfg. Co.
Weber, Herman G.

BARKING DRUMS
D. J. Murray Mfg. Co.
Fibre Making Processes, Inc.

BARKERS
D. J. Murray Mfg. Co.
Fibre Making Processes, Inc.
Valley Iron Work Co.

BARK PRESSES
Fibre Making Processes, Inc.

BARS (Beater)
Improved Paper Mchy. Corp.
International Nickel Co.

BEARINGS
Bantam Ball Bearing Co.
Improved Paper Mchy. Corp.
Link-Belt Co.
Montague Machine Works
S. K. F. Industries
The Manhattan Rubber Mfg.Co.
Timken Roller Bearing Co.
T. B. Wood's Sons Co.

BEARINGS, BALL (Angular Contact)
The Bantam Ball Bearing Co.
Gatke Corporation
SKF Industries, Inc.
Timken Ball Bearing Co.

BEARINGS, BALL (Radial and Thrust)
The Bantam Ball Bearing Co.
Gatke Corporation
SKF Industries, Inc.

BEARINGS, BALL (Self-Aligning)
The Bantam Ball Bearing Co.
Gatke Corporation
SKF Industries, Inc.

BEARINGS, QUILL
The Bantam Ball Bearing Co.
Gatke Corporation
SKF Industries, Inc.
Timken Ball Bearing Co.

BEARINGS, ROLLER
The Bantam Ball Bearing Co.
Gatke Corporation
SKF Industries, Inc.
Timken Roller Bearing Co.

BEARINGS, ROLLER (Self Aligning)
The Bantam Ball Bearing Co.
Gatke Corporation
Timken Roller Bearing Co.

BEARINGS, ROLLER (Thrust)
The Bantam Ball Bearing Co.
Gatke Corporation
SKF Industries, Inc.
Timken Roller Bearing Co.

BEARINGS, TABLE ROLLER
The Bantam Ball Bearing Co.
Gatke Corporation
SKF Industries, Inc.
Timken Roller Bearing Co.

BEATERS
The Appleton Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Improved Paper Mchy. Corp.
Jones & Sons Co., E. D.
Noble & Wood Machine Co.
Shartle Bros. Mch. Co.
Valley Iron Works Co.

BEATER BARS
Noble & Wood Machine Co.

BEATER BED PLATES
Dilts Machine Works, Inc.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
Taylor, Stiles & Co.
Valley Iron Works Co.

BEATER CONTROLS
Thwing Instrument Co.

BEATER ENGINE BARS
Dilts Machine Works, Inc.
E. D. Jones & Sons Co.
Taylor Stiles & Co.
Valley Iron Works Co.

BEATER HOODS
Dilts Machine Works, Inc.
E. D. Jones & Sons Co.

BEATER ROLLS
Dilts Machine Works, Inc.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.

BEATER STOCK RECORDER
Bristol Co., The
Control Equipment Corp.
Merritt Engineering & Sales Corp., The

BELTING
L. H. Gilmer Co.
Goodrich Rubber Co.
Goodyear Tire & Rubber Co.
The Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.
Rhoads Sons, J. E.

BLEACH EJECTORS
Perkins & Sons, Inc., B. F.

BLEACHING APPARATUS
E. D. Jones & Sons Co.
Moore & White Co.

BLEACHING POWDER
Mathieson Alkali Works, Inc.
Pennsylvania Salt Co.

BLEACHING PROCESS
Electro Bleaching Gas Co.
Pennsylvania Salt Mfg. Co.

BLOW PIPES
D. J. Murray Mfg. Co.

BLOW PIPING
Moore & White Co.

BLOW PITS
Hauser Stander Tank Co.
Kalamazoo Tank & Silo Co.

BLOW VALVES
D. J. Murray Mfg. Co.

BLOWERS (CENTRIFUGAL)
De Laval Steam Turbine Co.
Ross Engineering Corp., J. O.

BOARD MACHINES
Beloit Iron Works
Noble & Wood Machine Co.
Oliver United Filters, Inc.

BOILERS
Manufacturers Supply Co.

BOILER PRESERVATIVES
Magnus Chemical Co.

BOTTOMS (Steel & Wood)
Harrington & King Perforating Co.
Hauser Stander Tank Co.
Kalamazoo Tank & Silo Co.

BRASS COLLAPSIBLE SHAFTS
Moore & White Co., The

BREAKER BEATER WATER FEEDER
Control Equipment Corp.
Merritt Engineering & Sales Corp., The

BRICK, Digester
Stebbins Engrg. & Mfg. Co.

BUCKETS (elevating)
Hendrick Mfg. Co.
Link-Belt Co.

BULKERS (Pressure)
B. F. Perkins & Son, Inc.

BUNDLING PRESSES
Paper Converting Machine Co., Inc.
Potdevin Machine Co.
Weber, Herman G.

BURSTING TESTERS
B. F. Perkins & Son Co.
Testing Machines, Inc.

CALCIUM HYPOCHLORITE
Mathieson Alkali Works, Inc.
Pennsylvania Salt Mfg. Co.

CALENDERS
Beloit Iron Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Lobdell Car Wheel Co.
Moore & White Co.
Norwood Engrg. Co.
Perkins & Son, Inc., B. F.
Smith & Winchester Mfg. Co.

CALENDER DOCTORS
Downingtown Mfg. Co.
Ticonderoga Machine Works

CALENDER ROLL GRINDERS
Farrel-Birmingham Co.
Lobdell Car Wheel Co.
Smith & Winchester Mfg. Co.
Ticonderoga Machine Works

CALENDER ROLLS
Farrel-Birmingham Co.
Lobdell Car Wheel Co.
Perkins & Son, Inc., B. F.
Smith & Winchester Mfg. Co.
Waldron, Corp., John

CALIPERS (Micrometer Roll)
Farrell-Birmingham Co.
Lobdell Car Wheel Co.

CAMERAS (Photomicrographic)
Bausch & Lamb Optical Co.

CARBON BISULPHIDE
Pennsylvania Salt Co.

CASEIN
American Cyanamid & Chemical Corp.
The Casein Manufacturing Co. of America
Paper Makers Chemical Corp.

CASING
D. J. Murray Mfg. Co.

CASTINGS
International Nickel Co.
Farrel-Birmingham Co.
The Frederick Iron & Steel Co.
Lobdell Car Wheel Co.
Montague Machine Co.
Smith & Winchester Mfg. Co.

CASTINGS (Alloy)
Michigan Steel Castings Co.

CASTINGS (Brass, Bronze, Iron)
Downingtown Mfg. Co.
Smith & Winchester Mfg. Co.

CASTING (Chrome Nickel Alloy)
Lobdell Car Wheel Co.

CASTINGS (Iron)
Downingtown Mfg. Co.
Hamblet Macnine Co.
Link-Belt Co.
The Frederick Iron & Steel Co.

CAUSTIC SODA
American Cyanamid & Chemical Corp.
Mathieson Alkali Works, Inc.
Paper Makers Chemical Corp.
Pennsylvania Salt Mfg. Co.

CELLULOSE BAG MACHINERY
Potdevin Machine Co.

CEMENT
Pennsylvania Salt Mfg. Co.
Stebbins Engrg. & Mfg. Co.

CENTRIFUGAL MACHINERY (Special)
De Laval Steam Turbine Co.

CHAIN DRIVES
Link-Belt Co.

CHEMICAL FEED EQUIPMENT
Wallace & Tiernan, Co., Inc.

CHEMICALS
American Cyanamid & Chemical Corp.
E. I. DuPont de Nemours & Co., Inc.
Electro Bleaching Gas Co.
General Dyestuff Corp.
Geigy Co., Inc.
Gottesman & Co., Inc.
Paper Makers Chemical Corp.
Pennsylvania Salt Co
Solvay Sales Corp.
Williams & Co., C. K.

CHIPPERS
D. J. Murray Mfg. Co.
Valley Iron Works Co.

CHIP SCREENS
D. J. Murray Mfg. Co.
Fibre Making Processes, Inc.

CHLORINATING APPARATUS
Stebbins Engrg. & Mfg. Co.

CHLORINE
Electro Bleaching Gas Co.
Mathieson Alkali Works, Inc.
Pennsylvania Salt Co.

CHLORINE CONTROL APPARATUS
Wallace & Tiernan, Co., Inc.

CHROME PLATE
Chromium Corporation of America

CHUCKS
John Waldron Corp.

CIRCULATING SYSTEMS (Digester)
Fibre Making Processes, Inc.

CLAY
American Cyanamid & Chemical Corp.
English China Clays Sales Corp.
Paper Makers Importing Co.
Vanderbilt Co., R. T.

CLEANING MATERIALS
Magnus Chemical Co.
Philadelphia Quartz Co.

CLUTCHES
Beloit Iron Works
D. J. Murray Mfg. Co
Link-Belt Co.
Moore & White Co.
T. B. Wood's Sons

CLUTCH PULLEYS
Moore & White Co.
T. B. Wood's Sons

COATING MACHINERY
Moore & White Co.
Potdevin Machine Co.
Waldron Corporation, John
Weber, Herman G.

COATING MATERIALS
Paper Makers Chemical Corp.

COATINGS, Protective
Stebbins Engrg. & Mfg. Co.

COCKS, Lubricated
Crane Company

COGS
Bowsher, N. P., The

COLLAPSIBLE WINDER SHAFTS
Moore & White Co.

COLORIMETERS
Bausch & Lomb Optical Co.
Testing Machines, Inc.

COLOR ANALYZERS
Testing Machines, Inc.
Thwing Instrument Co.

COLOR MIXING EQUIPMENT
Waldron, John, Corp.

COMBINING MACHINES
Waldron Corp., John

COMPOUNDS, Acid Resisting
Stebbins Engrg. & Mfg. Co.

COMPRESSORS (Air)
Allis-Chalmers Mfg. Co.

COMPRESSORS (Centrifugal)
De Laval Steam Turbine Co.

CONSISTENCY REGULATOR
Merritt Engineering & Sales Corp., The
Trimbey Machine Works

CONTINUOUS BEATER ATTACHMENTS
E. D. Jones & Sons Co.

CONTINUOUS BEATERS
E. D. Jones & Sons Co.
Improved Paper Mchy. Corp.
Noble & Wood Machine Co.
Valley Iron Works Co.

CONTINUOUS BEATER WATER FEEDER
Control Equipment Corp.
Merritt Engineering & Sales Corp., The
Trimbey Machine Works.

CONTINUOUS PULPERS
Noble & Wood Machine Co.

CONTRACTORS, Engineering
Stebbins Engrg. & Mfg. Co.

WHERE TO BUY

CONTROLLING INSTRUMENTS
Bristol Co., The
Cambridge Instrument Co.
Control Equipment Corp.
Merritt Engineering & Sales Corp., The
Testing Machines, Inc.
Thwing Instrument Co.

CONTROLS (Electric)
Thwing Instrument Co.

CONVEYOR CHAINS
Link-Belt Co.

CONVEYORS (Trim)
Link-Belt Co.
Ross Engineering Corp., J. O.

COOKING & RECOVERY PROCESS
Chemipulp Process, Inc.
Fibre Making Processes, Inc.
Ross Engineering Corp., J. O

COOLERS
Stebbins Engrg. & Mfg. Co.

CORES (Paper)
Climax Tube Co.
Ellxman Paper Co.
Sonoco Products Co.

CORES (Steel)
Smith & Winchester Mfg. Co.

COTTON CALENDER ROLLER
Perkins & Son, Inc., B. F.

COUCH ROLLS
American Wringer Co.
Beloit Iron Works
D. J. Murray Mfg. Co.
Goodrich Rubber Co., B. F.
Montague Machine Co.
Moore & White Co., The
The Manhattan Rubber Mfg Division of Raybestos-Manhattan, Inc.

COUPLINGS
Beloit Iron Works
Chain Belt Co.
De Laval Steam Turbine Co.
Philadelphia Gear Works
T. B. Wood's Sons
The Frederick Iron & Steel Co.
Waldron Corp., John
Walworth Co.

CREPING MACHINES
Beloit Iron Works
Downingtown Mfg. Co.
Hudson Sharp Machine Co.
Paper Converting Machine Co., Inc.
John Waldron Corp.

CUTTERS
Beloit Iron Works
Downingtown Mfg. Co.

CYLINDER RAILROAD AND DEVIL DUSTER
Moore & White Co.

CYLINDER DRIVES
Moore & White Co., The

CYLINDER MOULDS
Beloit Iron Works
D. J. Murray Mfg. Co.
Improved Paper Mchy. Corp.
Downingtown Mfg. Co.

CYLINDER MOULD COVERINGS
Durkee Co., The F. G.

CYLINDER WIRES
Appleton Wire Works
International Wire Works

DAMPENERS
Perkins & Son, Inc., B. F.

DANDY ROLLS
Durkee Co., The F. G.

DECKERS
D. J. Murray Mfg. Co.
Improved Paper Mchy. Corp.
Montague Machine Co.
Oliver United Filters Inc.
Valley Iron Works

DEFOAMERS
National Oil Products Co.

DENSITY REGULATOR
Control Equipment Corp.

DIE CUTTERS
Appleton Machine Co., The
Merritt Engineering & Sales Corp., The

DIFFUSER EQUIPMENT
Fibre Making Processes, Inc.

DIGESTERS
Pusey & Jones Corp.
Stebbins Engrg. & Mfg. Co.

DIGESTER FITTINGS
W. J. Murray Mfg. Co.

DIGESTER LININGS
Stebbins Engrg. & Mfg. Co.

DOCTOR BLADES
Goodrich Rubber Co., B. F.
Improved Paper Mchy. Corp.
International Nickel Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc

DRAINAGE SYSTEMS
Stickle Steam Specialties Co.

DRIVES
D. J. Murray Mfg. Co.

DRIVE STANDS
Beloit Iron Works
Moore & White Co.

DRIVES (Paper Machinery)
Beloit Iron Works
Farrel-Birmingham Co.
General Electric Co.
Link-Belt Co.

DRYING SYSTEMS
Ross Engineering Corp., J. O.
Waldron Corporation, The

DUSTING MACHINERY
Fibre Making Processes, Inc.
Jones & Sons Co., E. D.
Moore & White Co.

DUSTERS (Chip)
D. J. Murray Mfg. Co.
Fibre Making Processes, Inc.

DYESTUFFS & COLORS
E. I. DuPont de Nemours & Co.
General Dyestuff Corp.
Heller & Merz
Geigy Co., The
National Aniline & Chemical Co.
C. K. Williams & Co.

ELECTRIC EQUIPMENT
Allis-Chalmers Mfg. Co.
General Electric Co.
Manufacturers Supply Co.

END GRAIN JORDAN WOODS
Noble & Wood Machine Co.

EMBOSSING CALENDERS
Perkins & Sons, Inc., B. F.
Textile Finishing Machinery

EMBOSSING MACHINES
Hudson Sharp Machine Co.
Paper Converting Machine Co.
John Waldron Corp.

EMBOSSING ROLLS
The Appleton Machine Co.
Hudson Sharp Machine Co.
B. F. Perkins & Son, Inc.
Roehlen Engraving Works, Inc.
Textile Finishing Mchy. Co.
Waldron Corporation, John

EXTRACTORS
Downingtown Manufacturing Co.
Valley Iron Works Co.

FANS
E. D. Jones & Sons Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

FAN PUMPS
Beloit Iron Works
Moore & White Co.
Valley Iron Works Co.
Smith & Winchester Mfg. Co.

FELT CARRIER ROLLS
American Wringer Co.
Beloit Iron Works
Downingtown Mfg. Co.
Goodrich Rubber Co., B. F.

FELT CLEANERS
Magnus Chemical Co.

FELTS AND JACKETS
Appleton Woolen Mills
Bulkley, Dunton & Co.
Draper Bros. Co.
Fitchburg Duck Mills
Huyck & Son, E. C.
Knox Woolen Co.
Lockport Felt Co.
Orr Felt & Blanket Co.
Shuler & Benninghofen
Turner, Halsey Co.
Waterbury Felt Co.

FELT GUIDES
Moore & White Co.

FELT SOAPS
Magnus Chemical Co.

FELT TIGHTENER (Automatic)
John Waldron Corp.

FILLINGS (Jordan)
International Nickel Co.

FILTERS
Improved Paper Mchy. Corp.
Moore & White Co.
Norwood Engrg. Co.
Oliver United Filters Inc.
J. O. Ross Engrg. Corp.
Stebbins Engrg. & Mfg. Co.

FILTER CLEANERS
Magnus Chemical Co.

FILTER WIRES
Appleton Wire Works

FITTINGS, Pipe (Plain end or flanged)
Crane Company
Taylor Forge & Pipe Works
Walworth Company

FITTINGS, Pipe Welding
Taylor Forge & Pipe Works

FLANGES
Crane Company
Walworth Co.

FLANGES, Pipe (Forged Steel)
Taylor Forge & Pipe Works

FLAT SCREENS
The Appleton Machine Co.
Beloit Iron Works
D. J. Murray Mfg. Co.
Downingtown Mfg. Co.

FLEXIBLE COUPLINGS
Beloit Iron Works
De Laval Steam Turbine Co.
The Frederick Iron & Steel Co.
Link-Belt Co.
Philadelphia Gear Works
John Waldron Corp.
T. B. Wood's Sons

FLEXIBLE SLICE
Beloit Iron Works
E. D. Jones & Sons Co.

FLOORING
Stebbins Engrg. & Mfg. Co.

FLOOR PLATES (Steel)
American Pressed Steel Co.

FLOOR TILE (Non-Slip)
Carborundum Co.
Norton Co.

FLY BARS
Dilts Machine Works, Inc.
Jones & Sons Co., E. D.
Noble & Wood Machine Co.

FOLDING ENDURANCE TESTERS
Testing Machines, Inc.

FOLDING MACHINES
Hamblet Machine Co.
Hudson Sharp Machine Co.
Paper Converting Machine Co., Inc.
Waldron, John, Corp.

FORMING MACHINES
Downingtown Mfg. Co.

FOURDRINIER MACHINES
Beloit Iron Works
Downingtown Mfg. Co.

FOURDRINIER WIRES
Appleton Wire Works
International Wire Works
Lindsay Wire Weaving Co.

FREENESS RECORDERS
Trimbey Machine Works

FREENESS TESTERS
Testing Machines, Inc.

FRICTION CALENDERS
Perkins & Son, Inc., B. F.
Textile Finishing Mchy. Co.

FRICTION CLUTCHES
Beloit Iron Works
Link-Belt Co.
Moore & White Co.
T. B. Wood's Sons

GEARS
Farrel-Birmingham Co.
D. J. Murray Mfg. Co.
De Laval Steam Turbine Co.
E. D. Jones & Sons Co.
Improved Paper Mchy. Corp.
Link-Belt Co.
Moore & White Co.
Philadelphia Gear Works
John Waldron Corp.

GENERATORS
De Laval Steam Turbine Co.
General Electric Co.

GRANITE ROLLS
Beloit Iron Works
Downingtown Mfg. Co.
Perkins & Sons, Inc., B. F.

GRATING (Sidewalk)
Hendrick Mfg. Co.

GRINDERS
Montague Machine Co.

GRINDING WHEELS
Carborundum Co.
Norton Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.

GUIDES (Automatic Web)
John Waldron Corp.

GUIDES (FELT)
Moore & White Co.

GUMMING AND GLUING MACHINERY
Potdevin Machine Co.
Waldron Corporation, John

GUMMED TAPE TESTERS
Thwing Instrument Co.

H. D. THICKENERS
Oliver United Filters, Inc.

HAND CLEANER
Magnus Chemical Co.

HAND CLEANER DISPENSERS
Magnus Chemical Co.

HANGERS
T. B. Wood's Sons Co.

HEATERS (Unit)
D. J. Murray Mfg. Co.
J. O. Ross Engrg. Corp.

HEATING AND VENTILATING SYSTEMS
Ross Engineering Corp., J. O.

HIGH DENSITY THICKENERS
Moore & White Co.

HOISTS (ELECTRIC)
General Electric Co.

HYDRAULIC MACHINERY
Farrel-Birmingham Co.

INDICATORS
The Bristol Co.
Testing Machines, Inc.
Thwing Instrument Co.

INTERFOLDING MACHINES
Hudson Sharp Machine Co.
Paper Converting Machine Co., Inc.
John Waldron Corp.

INSTRUMENTS
The Bristol Co.
Testing Machines, Inc.
Thwing-Albert Instrument Co.
Wilson Mechanical Instrument Co.

IRON CASTINGS
D. J. Murray Mfg. Co.
The Frederick Iron & Steel Co.

JORDANS
The Appleton Machine Co.
Jones & Sons Co., E. D.
Smith & Winchester Mfg. Co.
Valley Iron Works

JORDAN ENGINES
Noble & Wood Machine Co.

JORDAN FILLINGS
Bahr Bros. Mfg. Co., The
Jones & Sons Co., E. D.
Noble & Wood Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works

JORDAN PLUGS
Noble & Wood Machine Co.

KNIVES, ETC.
Dilts Machine Works, Inc.
Hamblet Machine Co.
Taylor, Stiles & Co.

LABELLING MACHINES
Potdevin Machine Co.

LABORATORY EQUIPMENT
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
Testing Machines, Inc.
Thwing-Albert Instrument Co.
Valley Iron Works.
Wilkens-Anderson Co.

LATHES
Montague Machine Co.

LAY BOYS
Hamblet Machine Co.
Moore & White Co.

LEVELERS
National Oil Products Co.

LIME MUD FILTERS
Oliver United Filters, Inc.

LITHOPONE
Krebs Pigment & Color Corp.
New Jersey Zinc Co.

LOFT DRYERS
Ross Engineering Corp., J. O.
John Waldron Corp.

LUBRICANTS
Gulf Refining Co.
Socony-Vacuum Corporation
Standard Oil Co. of Indiana
Tidewater Oil Co.

WHERE TO BUY

MAGNIFIERS (Pocket)
Bausch & Lomb Optical Co.

METERING & PROPORTIONING SYSTEMS
Trimbey Machine Works

MICROMETERS
Cady, E. J. & Co.
International Nickel Co.
Montague Machine Co.
Testing Machines, Inc.

MICRO-PROJECTORS
Bausch & Lomb Optical Co.

MICROSCOPES
Bausch & Lomb Optical Co.
Testing Machines, Inc.

MOTORS
Allis-Chalmers Mfg. Co.
General Electric Co.
Manufacturers Supply Co.

NAPKIN FOLDING MACHINE
Hudson Sharp Machine Co.
Paper Converting Machine Co., Inc.
Waldron, John, Corp.

NON-SLIP FLOOR STEEL
American Pressed Steel Co.

OPACIFYING PIGMENT
Krebs Pigment Co.
New Jersey Zinc Co.
Titanium Pigment Co.
R. T. Vanderbilt Co.

PACKAGING MACHINES
Hudson Sharp Machine Co.

PACKING
Stebbins Engrg. & Mfg. Co.

PACKING (Rubber)
B. F. Goodrich Rubber Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.

PAPER BAG MACHINERY
Potdevin Machine Co.
Smith & Winchester Mfg. Co
Weber, Herman G.

PAPER BREAK RECORDERS
Thwing-Albert Instrument Co.

PAPER CUTTERS
Downingtown Mfg. Co.
Hamlet Machine Company
Moore & White Co.
Smith & Winchester Mfg. Co.

PAPER MACHINES
Beloit Iron Works
Downingtown Mfg. Co.

PAPER MACHINE APRONS
Goodrich Rubber Co., B. F.

PAPER MACHINE DRIVES
Beloit Iron Works
Downingtown Mfg. Co.

PAPER MANUFACTURERS
Hammermill Paper Co.
West Virginia Pulp & Paper Co.

PAPER MACHINE HOODS
Ross Engineering Corp., J. O.

PAPER MACHINE SLICES
Beloit Iron Works
Montague Machine Co.

PAPER AND BOARD CUTTERS
Beloit Iron Works

PAPER AND PULP MACHINERY
Beloit Iron Works
Downingtown Manufacturing Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Lobdell Car Wheel Co.
Moore & White Co.
Perkins & Son, Inc., B. F.
Smith & Winchester Mfg. Co
Valley Iron Works Co.

PAPER ROLLS
B. F. Perkins & Son, Inc.
Waldron Corp., John

PAPER SCALES
Testing Machines, Inc.
Thwing-Albert Instrument Co.

PAPER STOCK WASHERS
Jones & Sons Co., E. D.

PAPER TESTERS
Perkins & Son, Inc., B. F.
Testing Machines, Inc.
Thwing-Albert Instrument Co.
Valley Iron Works Co.
Wilson Mechanical Instrument Co.

PAPER TUBE MACHINERY
Dietz Machine Works
Langston Co., Samuel M.

PAPER WAXING MACHINERY
Waldron Corp., John

PAPER PULPING ENGINES
Noble & Wood Machine Co.

PASTING MACHINES
Beloit Iron Works
Potdevin Machine Co.
John Waldron Corp.
Weber, Herman G.

PENESCOPE PENETRATION TESTER
Thwing-Albert Instrument Co.

PERFORATING MACHINES
Dietz Machine Works
Waldron, John, Corp.

PERFORATED METAL
Harrington & King Perforating Co.
Hendrick Mfg. Co.

pH CONTROL
Wallace & Tiernan, Co., Inc.

pH TESTERS
Wallace & Tiernan, Co., Inc.
Wilkens-Anderson Co.

PILLOW BLOCKS
T. B. Wood's Sons Co.

PIPE, Large O. D. (Steel or Wrought Iron)
Taylor Forge & Pipe Works

PIPE, Spiral (Welded or Riveted Steel)
Taylor Forge & Pipe Works

PIPE (Stainless)
International Nickel Co.
Mundt & Sons, Charles

PIPE (Wood)
Wyckoff, A., & Son.

PIPING
Crane Company
Walworth Co.

PLATES, Filter
Stebbins Engrg. & Mfg. Co.

PLATES (Floor)
American Pressed Steel Co.

PLATING, CHROMIUM
Chromium Corp. of America

PLATERS
Perkins & Son, Inc., B. F.

PLAYING CARD MACHINERY
Waldron, John, Corp.

POWER PLANT EQUIPMENT
Manufacturers Supply Co.

POWER TRANSMISSION EQUIPMENT
De Laval Steam Turbine Co.
Farrel-Birmingham Co.
Link-Belt Co.
Manufacturers Supply Co.
Philadelphia Gear Works
T. B. Wood's Sons

PRECISION INSTRUMENTS
The Bristol Co.
Taylor Instrument Co.
Testing Machines, Inc.
Thwing-Albert Instrument Co.

PREHYDRATION SYSTEMS
Noble & Wood Machine Co.

PRESSES (Napkin)
Paper Converting Machine Co.
Waldron Corp., John

PRESS ROLLS
American Wringer Co., Inc.
Beloit Iron Works
Downingtown Manufacturing
Goodrich Rubber Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Montague Machine Co.
Valley Iron Works Co.

PRESS ROLLS (Granite)
Beloit Iron Works
Perkins & Sons, Inc., B. F.

PRESSURE BULKER
B. F. Perkins & Son, Inc.

PRINTING MACHINES
Potdevin Machine Co.
Waldron, John, Corp.
Weber, Herman G.

PRINTING PRESSES
Hudson Sharp Machine Co.
Potdevin Machine Co.
Paper Converting Machine Co., Inc.
John Waldron Corp.
Weber, Herman G.

PROPELLERS
Noble & Wood Machine Co.

PROPELLER AGITATORS
Noble & Wood Machine Co.

PULLEYS
D. J. Murray Mfg. Co.
Link-Belt Co.
Improved Paper Mchy. Corp.
Montague Machine Co.
T. B. Wood's Sons

PULPERS
E. D. Jones & Sons Co.

PULP MILL EQUIPMENT (Chemical)
Chemipulp Process, Inc.
Fibre Making Processes, Inc.

PULPSTONES
Carborundum Co.
Norton Co.

PULP PRESSES
Farrel-Birmingham Co.

PULPS
Andersen Co., J.
Castle & Overton
Gottesman & Co., Inc.
Lagerloef Trading Co.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.

PULP SCREENS
D. J. Murray Mfg. Co.
Fibre Making Processes, Inc.
E. D. Jones & Sons Co.
Trimbey Machine Works

PULP AND PAPER MILL MACHINERY
D. J. Murray Mfg. Co.
Stebbins Engrg. & Mfg. Co.

PULP THICKENERS
D. J. Murray Mfg. Co
Downingtown Mfg. Co.
Moore & White Co.

PULP WASHERS
Oliver United Filters, Inc.

PULP WOOD MACHINERY
Fibre Making Processes, Inc.
Montague Machine Co.

PUMP PRIMERS (Steam and Water Jet)
Valley Iron Works Co.

PUMPS (Acid)
Carthage Machine Co.
De Laval Steam Turbine Co.
Frederick Iron and Steel Co.
Moore & White Co.
Oliver United Filters Inc.
The Frederick Iron & Steel Co.
Valley Iron Works

PUMPS (Centrifugal)
Allis-Chalmers Co.
Downingtown Mfg. Co.
The Frederick Iron & Steel Co.
Oliver United Filters, Inc.

PUMPS (Stuff)
Allis-Chalmers Co.
Beloit Iron Works
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
The Frederick Iron & Steel Co.
International Nickel Co.
Moore & White Co.
Oliver United Filters Inc.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

PUMPS (Suction)
Moore & White Co.

PUMPS (Vacuum)
Oliver United Filters, Inc.

PYROMETERS (Roll)
The Bristol Co.
Pyrometer Instrument Co.
Testing Machines, Inc.
Thwing-Albert Instrument Co.

PYROMETERS (Surface — Optical — Radiation)
Pyrometer Instrument Company
Testing Machines, Inc.
Thwing-Albert Instrument Co.

RAG CUTTERS
Perkins & Son, Inc., B. F.
Taylor Stiles & Co.

REAM COUNTERS
Hamblet Machine Co.

RECHIPPERS
Fibre Making Processes, Inc.

RECORDING INSTRUMENTS
The Bristol Co.
Taylor Instrument Co.
Testing Machines, Inc.
Thwing Instrument Co.

RECORDING TACHOMETERS
The Bristol Co.
General Electric Co.
Pusey & Jones Corp.

RECOVERY OF WASTE PRODUCTS
Stebbins Engrg. & Mfg. Co.

RECOVERY SYSTEM (Soda & Sulphite)
D. J. Murray Mfg. Co.
Ross Engineering Corp., J. O.

RECOVERY SYSTEMS (Waste Heat)
Ross Engrg. Corp., J. O.

REELS
Downingtown Mfg. Co.
Hudson Sharp Machine Co.

REELS, (Upright & Revolving)
Beloit Iron Works
De Laval Steam Turbine Co.
Moore & White Co.

REFINERS
Bahr Bros.

REFINING ENGINES
Jones & Son Co., E. D.

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Carborundum Co.
Norton Co.

REGULATORS
The Bristol Co.
Control Equipment Corp.
Mason Neilan Regulator Co.
Merritt Engrg. & Sales Co., Inc.
Trimbey Machine Works

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Cameron Machine Co.
Deitz Machine Works
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Hamblet Machine Co.
Langston Co., Samuel M.
Moore & White Co.
Smith & Winchester Mfg. Co.
John Waldron Corp.

ROD MILL
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Mine & Smelter Supply Co.

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American Wringer Co.
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Downingtown Mfg. Co.
Goodrich Rubber Co.
Improved Paper Mchy. Corp.
Montague Machine Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Roehlen Engraving Works, Inc.
John Waldron Corp.

ROLLS (Chilled Iron & Gray Iron)
Farrel-Birmingham Co.
Improved Paper Mchy. Corp.
Lobdell Car Wheel Co.
Smith & Winchester Mfg. Co.
Valley Iron Works

ROLLS (Rubber or Rubber Covered)
American Wringer Co.
Beloit Iron Works
B. F. Goodrich Rubber Co.
D. J. Murray Mfg. Co.
Downingtown Mfg. Co.
Improved Paper Mchy. Corp.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Montague Machine Co.
United States Rubber Co.

ROLL GRINDERS
Farrel-Birmingham Co.
Lobdell Car Wheel Co.

ROLL SLITTING MACHINES
Cameron Machine Co.
Langston Co., Samuel M.

ROLL STANDS
Cameron Machine Co.
Moore & White Co.

ROLL WINDING MACHINES
Cameron Machine Co.

ROSIN SIZE
American Cyanamid & Chemical Corp.
Bennett, Inc.
Paper Makers Chemical Co.

ROTARY SCREENS
Fibre Making Processes, Inc.
E. D. Jones & Sons Co.
Moore & White Co.
Valley Iron Works

RUBBER GOODS
American Wringer Co.
Goodyear Tire & Rubber Co.
B. F. Goodrich Rubber Co.
The Manhattan Rubber Mfg. Co.

RUBBER HOSE
B. F. Goodrich Rubber Co.
Goodyear Tire & Rubber Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.

SALT
Pennsylvania Salt Co.

WHERE TO BUY

SAND & POLISHING MACHINES
Carborundum Co.
Waldron, John, Corp.

SATURATING MACHINES
Moore & White Co.
Potdevin Machine Co.
Waldron, John, Corp.
Weber, Herman G.

SAVEALLS
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Improved Paper Mchy. Corp.
Moore & White Co.
Oliver United Filters Inc.

SCALES
Cady, E. J. & Co.
Testing Machines, Inc.
Thwing-Albert Instrument Co.

SCORE TESTERS
Testing Machines, Inc.
Thwing-Albert Instrument Co.

SCREEN DIAPHRAGMS
Goodrich Rubber Co., B. F.

SCREENS
Appleton Wire Works
Beloit Iron Works
D. J. Murray Mfg. Co.
Downingtown Mfg. Co.
Fibre Making Processes, Inc.
International Wire Works
E. D. Jones & Sons Co.
Improved Paper Mchy. Corp.
Link-Belt Co.
Montague Machine Co.
Moore & White Co.
Valley Iron Works

SCREENS (Perforated Metal)
Harrington & King Perforating Co.
Hendrick Manufacturing Co.
Charles Mundt & Sons

SCREEN PLATE
D. J. Murray Mfg. Co.
Hendrick Mfg. Co.
Improved Paper Mchy. Corp.
Union Screen Plate Co.

SHAFTS (Forged)
T. B. Wood's Sons

SHEET MACHINE
Noble & Wood Machine Co.

SHEAVES
Montague Machine Co.
T. B. Wood's Sons Co.

SHOWER PIPES
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Montague Machine Co.
Moore & White Co.
Smith & Winchester Mfg. Co.

SHREDDERS (Pulp and Paper)
E. D. Jones & Sons Co.
Taylor Stiles & Co.

SILICATE OF SODA
American Cyanamid & Chemical Corp.
Philadelphia Quartz Co.

SIZING
National Oil Products

SIZING PROCESS
Bennett, Inc.
National Oil Products Co.
Ross Engrg. Corp., J. O.

SLIME ELIMINATION
Wallace & Tiernan, Co., Inc.

SLIME REMOVER
Magnus Chemical Co.

SLITTERS AND REWINDERS
Beloit Iron Works
Cameron Machine Co.
Dietz Machine Works
Downingtown Mfg. Co.
Hamblet Machine CO.
Langston Co., Samuel M.
Moore & White Co.
Smith & Winchester Mfg. Co.
Waldron Corporation, John.

SODA ASH
American Cyanamid & Chemical Corp.
Mathieson Alkali Works, Inc.
Paper Makers Chemical Corp.
Pennsylvania Salt Mfg. Co.
Solvay Sales Corp.

SOAP POWDER
Magnus Chemical Co.
Paper Makers Chemical Corp.

SODIUM METASILICATE
Philadelphia Quartz Co.

SORTING TABLES
Moore & White Co.

SPECIAL MACHINERY
D. J. Murray Mfg. Co.
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Hamblet Machine Co.
Hudson Sharp Machine Co.
Montague Machine Co.
Paper Converting Machine Co., Inc.
John Waldron Corp.

SPEED CHANGES (Variable)
Moore & White Co.

SPEED REDUCERS
Beloit Iron Works
De Laval Steam Turbine Co.
Farrel-Birmingham Co.
Link-Belt Co.
Philadelphia Gear Works

SPIRAL BEVEL GEARS DRIVE STANDS
Beloit Iron Works
Moore & White Co.
Philadelphia Gear Works

SPROCKETS
Improved Paper Mchy. Corp.

STAIR and FLOOR TILES—(Non-Slip)
Carborundum Co.
Norton Company

STAIR TREADS
Carborundum Co.
Norton Company

STARCH
American Cyanamid & Chemical Corp.
Clinton Co.
Corn Products Refining Co.

STEAM SPECIALTIES
Crane Company
Stickle Steam Specialties Co.

STOCK CUTTERS
Perkins & Sons, Inc., B. F.

STOKERS—Screw or Plunger Type
The Frederick Iron & Steel Co.

STEEL (Electric Furnace)
Timken Roller Bearing Co.

STEEL (Open Hearth)
Timken Roller Bearing Co.

STEEL (Stainless)
Jones & Sons Co., E. D.

STEEL PLATE CONSTRUCTION
Hendrick Mfg. Co.
Link Belt Co.
Ross Engrg. Corp., J. O.

STOCK REGULATORS
Control Equipment Corp.
Merritt Engineering & Sales Corp., The
Trimbey Machine Co.

STRAW MAKING MACHINERY
Samuel H. Langston Co.

STUFF CHESTS
D. J. Murray Mfg. Co.
Downingtown Mfg. Co.
Hauser Stander Tank Co.
Improved Paper Mchy. Corp.
Jones & Sons Co., E. D.
Kalamazoo Tank & Silo Co.
Moore & White Co.
Noble & Wood Machine Co.
Valley Iron Works Co.

STUFF PUMPS
Beloit Iron Works
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
The Frederick Iron & Steel Co.
Moore & White Co.
Noble & Wood Machine Co.
Smith & Winchester Mfg. Co
Valley Iron Works Co.

SUCTION BOXES
Downingtown Mfg. Co.

SUCTION BOX COVERS
Moore & White Co.

SUCTION ROLLS
American Wringer Co.
Beloit Iron Works
Downingtown Mfg. Co.

SUCTION FELT ROLLS
Beloit Iron Works
Downingtown Mfg. Co.

SULPHITE (Bleached and Unbleached)
Anderson & Co., J.
Castle & Overton
Gottesman & Co., Inc.
Lagertoef Trading Co.
Perkins-Goodwin Co.
Price & Pierce Ltd.

SULPHUR
American Cyanamid & Chemical Corp.
Texas Gulf Sulphur Co.

SUPER CALENDERS
Beloit Iron Works
Farrell-Birmingham Co.
Lobdell Car Wheel Co.
Moore & White Co.
Norwood Engrg. Co.
Perkins & Son, Inc., B. F.
Smith & Winchester Mfg. Co.

SURFACE PYROMETERS
Testing Machines, Inc.
Thwing Instrument Co.

TABLE ROLLS
American Wringer Co.
Beloit Iron Works
Goodrich Rubber Co., B. F.

TACHOMETERS
The Bristol Co.
Testing Machines, Inc.

TANKS
Hauser Stander Tank Co.
Hendrick Mfg. Co.
International Nickel Co.
Kalamazoo Tank & Silo Co.
The Manhattan Rubber Mfg. Co.
J. O. Ross Engrg. Corp.
Stebbins Engrg. & Mfg. Co.

TEAR TESTERS
Testing Machines, Inc.
Thwing Instrument Co.

TELETYPE MACHINES
American Tel. & Tel. Co.

TEMPERATURE RECORDERS
The Bristol Co.
Taylor Instrument Co.
Testing Machines, Inc.
Thwing-Albert Instrument Co.

TENSILE TESTERS
Perkins & Sons, Inc., B. F.
Testing Machines, Inc.
Thwing-Albert Instrument Co.

TESTERS (Bursting Strength)
Cady, E. J. & Co.
Testing Machines, Inc.
Perkins & Son, Inc., B. F.

TESTERS (pH)
Thwing-Albert Instrument Co.
Wallace & Tiernan, Co., Inc.
Wilkens-Anderson Co.

TESTERS (Stiffness)
W. & L. E. Gurley
Testing Instruments, Inc.
Thwing-Albert Instrument Co.
Wilson Mechanical Instrument Co.

TESTING INSTRUMENTS (Thickness Test)
E. J. Cady & Co.
Testing Instruments, Inc.

TESTING INSTRUMENTS (Basis Weights)
E. J. Cady & Co.
Testing Instruments, Inc.
Thwing-Albert Instrument Co.

TESTING LABORATORY
E. I. DuPont De Nemours & Co., Inc.

TEXROPE DRIVES
Allis-Chalmers Mfg. Co.

THICKENERS
D. J. Murray Mfg. Co.
Improved Paper Mchy. Corp.
Oliver United Filters, Inc.

THERMOMETERS
The Bristol Co.
Taylor Instrument Co.
Testing Machines, Inc.
International Nickel Co.

TITANIUM PIGMENT
Krebs Pigment & Color Corp.
Titanium Pigment Co.
R. T. Vanderbilt Co.

TIE RODS
International Nickel Co.

TOILET FOLDING MACHINES
Hudson Sharp Machine Co.
Paper Converting Machine Co., Inc.

TOILET WINDERS
Cameron Machine Co.
Dietz Machine Works
Hudson Sharp Machine Co.

TOWEL FOLDING MACHINES
Paper Converting Machine Co., Inc.
Waldron Corp., John

TOWEL INTERFOLDING MACHINES
Dietz Machine Works
Hudson Sharp Machine Co.

TOWEL WINDER
Cameron Machine Co.
Hudson Sharp Machine Co.
Waldron Corp., John

TOWERS
Cameron Machine Co.
Hudson Sharp Machine Co.
Stebbins Engrg. & Mfg. Co.
Waldron Corp., John

TRANSMISSION MACHINERY
Beloit Iron Works
De Laval Steam Turbine Co.
Farrel-Birmingham Co.
Link Belt Co.
T. B. Wood's Sons
Timken Roller-Bearing Co.

TREADS (Non-Slip)
Carborundum Co.
Norton Company

TRAPS (Steam)
Crane Company

TRUCKS
Moore & White Co.

TUBES (Paper)
Climax Tube Co.
Elixman Paper Core Co.

TUBING (Seamless Steel)
Timken Roller Bearing Co.

TUBS (Beater)
Hauser Stander Tank Co.

TUBS (Wood)
De Laval Steam Turbine Co.
Hauser Stander Tank Co.

TURBINES (Hydraulic)
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.

TURBINES (Water)
De Laval Steam Turbine Co.

TURBO-GENERATORS
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.

USED EQUIPMENT
Manufacturers Supply Co.

V-BELTS
Allis-Chalmers Mfg. Co.
L. H. Gilmer Co.
B. F. Goodrich Rubber Co.
Goodyear Tire & Rubber Co.
T. B. Wood's Sons

VACUUM CONTROL
Appleton Machine Co.
Broughton Systems

VALVES
Crane Company
D. J. Murray Mfg. Co.
International Nickel Co.
E. D. Jones & Sons Co.
Ross Engineering Corp.
Trimby Machine Works
Walworth Co.

VENTILATING SYSTEMS
J. O. Ross Engrg. Corp.

WASHERS
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Improved Paper Mchy. Corp.
Moore & White Co.
Oliver United Filters Inc.

WASHERS (Stock)
Improved Paper Mchy. Corp.

WASHERS (Wood)
Downingtown Mfg. Co.
Fibre Making Processes, Inc.

WAXING MACHINERY
Potdevin Machine Co.
Waldron, John, Corp.
Weber, Herman G.

WAX SIZE
American Cyanamid & Chemical Corp.
Bennett, Inc.
National Oil Products Co.
Paper Makers Chemical Corp.

WET MACHINES
Downingtown Mfg. Co.
Improved Paper Mchy. Corp.
Montague Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works

WINDERS
Beloit Iron Works
Cameron Machine Co.
Downingtown Mfg. Co.
Langston Co., Samuel M.
Moore & White Co.
Smith & Winchester Mfg. Co.
John Waldron Corp.

WIRES
Appleton Wire Works
Improved Paper Mchy. Corp.
International Wire Works
Lindsay Wire Weaving Co.
Purves Machine Wire Co., Inc.

WIRE CLEANERS
Magnus Chemical Co.

WIRE CLOTH
International Nickel Co.

WIRE CLOTH (Filter)
Oliver United Filters, Inc.

WIRE GUIDES
Moore & White Co.
John Waldron Corp.

WIRE GUIDE ROLLS
American Wringer Co.
Goodrich Rubber Co., B. F.

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American Wringer Co.
Valley Iron Works Co.

WOOD SPLITTERS
D. J. Murray Mfg. Co.
Moore & White Co.

WORMED CUTTERS
American Wringer Co.

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